

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

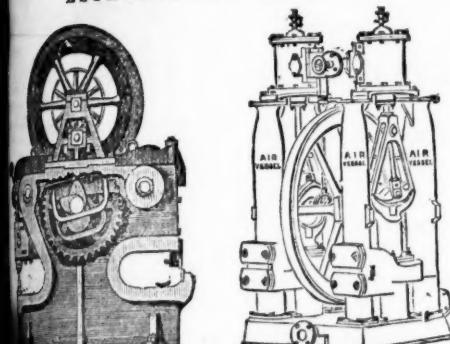
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PARIS,
BRONZE MEDAL, 1867.

ORDER OF THE CROWN OF PRUSSIA.

FALMOUTH,
SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the Geographical Congress, Paris, 1875—M. Favre, Contractor, having exhibited the McKean Drill alone as the MODEL BORING MACHINE for the ST. GOTTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gotthard Tunnel, where

THE McKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecutive weeks, ending February 7, was 24·90, 27·60, 24·80, 26·10, 28·30, 27·10, 28·40, 28·70 metres. Total advance of south heading during January was 121·30 metres, or 133 yards.

In a series of comparative trials made at the St. Gotthard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere ($\frac{1}{2}$ lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these Machines for the SEVERN TUNNEL; the LONDON AND NORTH-WESTERN RAILWAY for the FESTINIOG TUNNEL; and the BRITISH GOVERNMENT for several Public Works. A considerable number of Mining Companies are now using them. Shafts and Galleries are driven at from three to six times the speed of hand labour, according to the size and number of machines employed, and with important saving in cost. The ratio of advantage over hand labour is greatest where the rock is hardest.

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The McKEAN ROCK DRILLS are the most powerful—the most portable—the most durable—the most compact—of the best mechanical device. They contain the fewest parts—have no weak parts—act without SHOCK upon any of the operating parts—work with a lower pressure than any other Rock Drill—may be worked at a higher pressure than any other—may be run with safety to FIFTEEN HUNDRED STROKES PER MINUTE—do not require a mechanic to work them—are the smallest, shortest, and lightest of all machines—will give the longest feed without change of tool—work with long or short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or open work. Their working parts are best protected against grit and accidents. The various methods of mounting them are the most efficient.

N.B.—Correspondents should state particulars as to character of work in hand in writing us for information, on receipt of which a special definite answer, with reference to our full illustrated catalogue, will be sent.

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Has only two moving parts—thus ensuring freedom from derangement, and is absolutely self-feeding.

Is excessively light, and can be carried by one man, who can with the No. 1 size (weighing only 35 lbs.) drill 40 holes $\frac{1}{2}$ in. diameter and $1\frac{1}{2}$ in. deep per minute, in the hardest Aberdeen granite for splitting purposes.

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STEAM and HYDRAULIC WINDING and PUMPING ENGINES
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SHAFTS, AND PERFORMING
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IMPORTANT NOTICE TO MINE PROPRIETORS.

M. GEORGE GREEN, ENGINEER, ABERYSTWITH
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2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED
BY DRESSING-FLOORS IS REQUIRED.

3.—FROM 60 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND
FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.

4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN
FOR MARKET AT ONE OPERATION.

They have been supplied to some of the principal mines in the United Kingdom and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines Darlington, Colbry, Nanthead, and Bollyhope; the Stonecroft and Greyside Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the Duke of Buccleuch's); Bewick Partners, Haydon Bridge: the Old Darren, Esquirmwyn, and Ystumtyn Mines, in Cardiganshire; Mr. Beaumont's W. B. Mines, Darlington; also Mr. Sewell, for Argentiferous Copper Mines, Peru; the Bratberg Copper Mines, Norway, and Mines in Italy, Germany, United States of America, and Australia, from all of whom certificates of the complete efficiency of the system can be had.

WASTE HEAPS, consisting of refuse cherts and skimpings of a former washing, containing a mixture of lead, blonde, and sulphur, DRESSED TO A PROFIT.

M. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly profit on our Nanthead waste heaps amounted last year to £2000, (besides the machinery being occupied for some months in dressing ore-stuff from the mines). Of course, if it had been wholly engaged in dressing wastes our return would have been greater; but it is giving us every satisfaction, and bringing the waste heaps into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines, Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much pleasure in stating that a full and superior set of your Ore Dressing Machinery has been at work at these mines for fully a month, and each day as the moving parts become smoother, and those in charge understand the working of the machinery better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply, and satisfactorily than by any other method."

Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines, says—"Your machinery saves fully one-half on old wages, and vastly more on the wages we have now to pay. Over and above the saving in cost is the saving in ore, which is about 10 per cent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The separation which they make is complete."

Mr. MONTAGUE BRAILE says—"It will separate ore, however close the mechanical mixture, in such a way as no other machine can do."

Mr. C. DODSWORTH says—"It is the very best for the purpose and will do for any kind of metallic ores—the very thing so long needed for dressing-floors."

Drawings, specifications, and estimates will be forwarded on application to—

GEORGE GREEN, M.E., ABERYSTWITH SOUTH WALES

AUG. 11, 1877.]

Original Correspondence.

ROCK-BORING MACHINERY—No. II.

The most important source of loss in compressing air is the accumulation of heat. During compression heat is expressed, the quantity increasing with the density of the air. As heat is equivalent to work, it follows that if the former is accumulated within the air cylinder it must act in opposing the path of the piston, thereby constricting resistance, or otherwise, it must be abstracted by the application of a convenient body for that purpose. Fortunately, water is a suitable agent; hence it is that the air cylinder is frequently provided with a water-jacket or provided with spray jets set in the upper ends. To favour the action of the water and to keep a cool space of air, the velocity of the piston should be kept low. Another source of loss of work, the consequence of which increases in proportion with the degree of compression, is the clearance spaces at the ends of the cylinder. If these are not completely blocked such air as may remain will be filled with compressed air, which will slow the piston in its back stroke, and prevent the access of air to the cylinder until the inlet valve is relieved from internal pressure. Other sources of loss might be referred to, such as loss of effect resulting from the use of compressed air without expanding it in the air cylinder; but a careful investigation of the mechanical properties of air, together with the action of these properties during compression and the subsequent use and return of the air to its normal condition, will show that boring machines as well as pneumatic engines, which work under a pressure of two or three atmospheres, are much more economical in their draft on fuel than machines which demand a pressure of from five to eight atmospheres for performing their work.

Air compressors may be driven by means of water-turbines, or water-pressure engines. At the ordinary speed of water-wheel wet compressors may be directly attached to the shaft—if desirable, the power of the wheel may be increased on a triple set of single-acting cylinders. The turbine may run at a high velocity—hence to connect the compressor with this kind of motor intermediate gear is required. At the end of the St. Gotthard Tunnel twelve compressors have been set in groups of three on one side of a common driving shaft, and is set in motion by four distinct turbines by means of bevelled gears.

The water for driving the turbines is drawn from one of the lakes of the Tessin, and fall about 530 ft., affording a static head of 200 lbs. per square inch. The turbines make 300 to 400 revolutions per minute, and in the same time the compressors 80 to 100 revolutions. Water-pressure engines give a steady, but somewhat slow, movement for running compressors direct. They may, however, be advantageously employed in localities where water is abundant at moderate falls, and some attention can be given to the efficiency of the working parts.

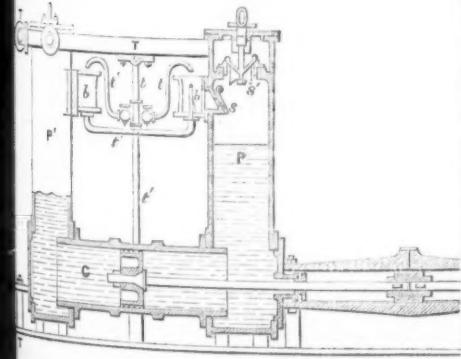
STEAM ENGINES.—In some of the earlier compressing machines steam was transmitted from the engine to the compressing cylinder by means of spur wheel gearing. This arrangement admitted of a velocity in the steam piston, and a comparatively slow one in the compressing piston, but it rendered the strain unequal on the shafts, and sometimes led to their breakage.

The more recent practice is to couple the piston of the air cylinder to the crank, so that the maximum effect of the steam may be obtained at the time that the air is being delivered to the receiver.

By employing double steam and compressor cylinders, so that the steam cylinder may overcome the resistance offered by the opposite air cylinder. In addition, it is found desirable to fit the engine with a variable expansion valve, and to economise power by using steam of considerable pressure (five or six pounds), and cutting it off at from three to five-eighths of the stroke of the piston.

SOMMEILLER'S COMPRESSOR.—At the Marie Colliery, Seraing, elsewhere in Belgium, Sommeiller's wet compressors are

shown in vertical section through the centre of one cylinder. It moves horizontally in a cast-iron cylinder, C, which is full of water. From the two extremities of the cylinder two vertical cylinders, P and P', closed at their upper ends, are admitted through a rectangular opening in the side of the cylinder—the intake valve, S, being of leather, stiffened with iron plates in the ordinary mine-buckets. The discharge into the receiver takes place from the upper part through a brass valve, S. The movement of the piston in the cylinder, C, causes the water in the vertical columns to rise on one end to fall on the other. Above the falling water a partial vacuum is formed, causing the admission valve to open, and the space to be filled with air. When the piston returns in the opposite direction the water is driven back, and the air with it. The admission valve is closed, and as soon as the air is compressed to a pressure equal to that in the receiver the delivery valve opens, water rises through and above the outlet valve, filling the outlet space, and driving into the receiver the whole of the air compressed. To avoid inconvenience arising from any corrosive action of the water the piston is made of brass, and the rod inclosed in brass. The steam cylinders are 19½ in. diameter; stroke 4 feet, and are fitted with variable expansive gear, the cut-off being at one-half of the stroke. The fly-wheel is 16½ ft. diameter and weighs 128 cwt. The compressor cylinders are 17½ in. diameter. The minimum speed of the engine is five revolutions or less per minute; the maximum 20 revolutions or 100 ft. per minute. The effective work exerted on this compressor at the colliery is 84 per cent. of the indicated engine work.



Recently conducted experiments with a Sommeiller compressor at the Sarrebruck Mines to supply rock-boring machines were made with the following results:

	One atmosphere.	Two atmospheres.	Three atmospheres.
1	0.94	0.88	0.85
2	0.95	0.885	0.855
3	0.93	0.88	0.85
4	0.95	0.90	0.865
5	0.94	0.87	0.83
6	0.93	0.85	0.80
Mean.	0.94	0.877	0.84

HUMBOLDT WET COMPRESSOR.—This compressor is held especially applicable for mining purposes. Pistons and bored cases are substituted by an ordinary bar plunger and cases, the valves consist of india-rubber, resting on and around grids. The chamber is at the end of each plunger-case. The air is compressed in direct contact with water, as in the Sommeiller appa-

ratus. The following are the particulars of a compressor erected at the Sarrebruck Collieries. The motor is a horizontal expansion steam-engine—cylinder 24½ in. diameter, stroke 43 in. With a pressure of 30 lbs. of steam and a cut-off at half-stroke this engine develops at 25 revolutions a minute about 54-horse power. The plunger of the compressor is 15½ in. diameter, and 12 ft. long. This plunger passes out of one case into that of another, both cases being on the same horizontal plane. Each plunger-case is 5 feet long, 33 in. in diameter and 5 in. in height, upon which is placed a water-chest, 27 in. in depth—making a height of 33 in. above the top of the horizontal case. The stuffing-boxes of the two cases are distant 6 ft. from each other. In this space a cross head, attached to the middle part of the plunger and travelling in guides, is connected to side rods, which movement is communicated to the plungers. The length of stroke in the plungers is 4 ft. Some years ago a series of 20 experiments with this form of compressor were made at Altenwald. The speed of the plunger was moderately low. With an air pressure in the receiver varying from 30 lbs. to 45 lbs. per square inch the useful quantity of air compressed is stated to have equalled 96 per cent. of the theoretical quantity due to the cubic contents of the stroke. The following are the dimensions of some of the compressors constructed by the Humboldt Company:

No.	Diam. of cylinder.	Diam. of steam cylinder.	Length of stroke.
1	6 in.	9 in.	15 in.
2	7½ in.	10½ in.	20 in.
3	9 in.	12 in.	24 in.
4	12 in.	16 in.	36 in.
5	15 in.	19 in.	48 in.

J. DARLINGTON.

MINING ON LAKE SUPERIOR.

SIR,—Notwithstanding the great improvements in mining machinery, and in the principle of mining on Lake Superior generally, the depression in the copper market seems to have a very serious effect, so much so that mines of great value are now at a standstill. To commence, I will name the National Mine, which for several years has turned out very large masses of the pure metal at great profit, and even after the company abandoned all work tributaries were allowed in, and in several instances those miners were in the act of uncovering large masses of copper when the water rose and drove them out. Those masses are there now, and will be seen whenever the water is pumped out. I am told, by a good authority, that a windmill can be provided to pump out the water for \$5000, of 40 horse power, which could work 10 inch pumps for over 1000 feet deep, and which could pump out both the Minnesota and National Mines. Here is a chance for a good investment, to take hold of those two mines and consolidate them, as, undoubtedly, they could be bought just now at a very low figure, having sufficient amount of machinery of all descriptions and in good condition. Good returns of copper could be made almost at once to help to meet the expenses in placing those mines in a good working condition.

The Old Forest Mine—now the Victoria Mine—on the west side of Ontonagon river, having the same run of lodes as the Minnesota and National, have lately put up what is known as Gates's stamps, and a windmill for pumping the water in the mine. This company has yet room for further improvement, by going down to the west branch of Ontonagon river, less than a mile from the mine, where Nature has well provided an excellent position for turbine wheel of great power, and by attaching an air-compressor to it they could drive their stamps and hoist out of the mine, thereby substituting compressed air to stamp and hoist, and wind power to pump, in place of costly fuel to make steam. Steam power alone in the Victoria Mine to work anything of a force would cost \$20 a day, or (say) \$6000 a year; while compressed air and wind power would only cost about \$5 a day, or \$1500 a year. The Victoria Mine, under these circumstances, is an excellent investment, and as there is a stamp there returns of copper could be made at once, and in three months' working sufficient amounts could be had to pay expenses. (The windmill is a success.)

Your correspondent who wrote in the Cornish dialect, and which appeared in the Journal of June 16, seems to have the right track of starting shafts in mining, and I am positive there have been immense fortunes wasted in perpendicular shafts. If there is such a thing possible as a waste of power in pumping in incline shafts, which I cannot for a moment perceive, we are all sure there is an immense saving of power in hoisting with incline railroads compared with kibbles, and it seems to me most absurd to see those perpendicular shafts still believed in, striking the lode at a given depth, and then take the underlie of the lode. When a cross-cut is driven to cut the lode from a perpendicular shaft, it is, as your correspondent remarks, many chances to one the lode proves to be poor, and at the same time, perhaps, within a few feet of a large body of ore; but the cutting of the lode where it was poor does, in many instances, prove to be the fatal blow, having spent an immense amount of money to sink in the hard country rock, while if the shaft was sunk on the lode quite another aspect of affairs would in all probability be the case.—Portage Lake, July 22.

COUSIN JACK.

spectability may be beyond question. As to the present Flagstaff officers in Salt Lake, there is only one complaint to make against them—they are not experienced mining men, having chiefly devoted themselves to other businesses, in which they are no doubt experts, but this complaint is one to which the shareholders, both for the sake of their own pockets and for the reputation of the Salt Lake district as a rich mining centre, should give their immediate and most earnest attention. Let them take my advice, and enquire of disinterested, scientific, honest, professional men.

MINING ENGINEER.

Salt Lake City, July 15.

BITUMINOUS SHALES IN CALIFORNIA.

SIR,—Minerals closely resembling Albertite, Turbane Hill mineral, and the bituminous shale of Scotland respectively, have been found in California. There runs irregularly through the Six-foot coal vein we examined layers 2 to 3 in. thick of a dusky yellowish substance like clay, that when dry is very light and cleanly to handle. The sump below the coal exposes a vein of that substance 12 ft. thick; by rude test it yields 20 per cent. more and purer illuminating gas than the coal. It diffuses in burning a balsamic odour exactly like attar of incense. Though formed in an age of the world many thousands of years, or rather centuries, later than the Scotch mineral, there is apparently near kinship. We have found this mineral far from that locality in the same basin, so that the supply is enduring.

Now, the lignite coals of California appear too light and ashly to carry the burden of iron ore and limestone in a blast-furnace of ordinary form, but Nature has set them in juxtaposition, intimating that they can be worked together. We are advised that the lignites of Germany are converted into carburetted hydrogen gas, by which hematite ores are smelted, and superior iron is made. If this be true, the Ione coal field will be the centre of vast ironworks, making in time a sort of Birmingham or Sheffield; it is on this account that we attempt to give some conception of the locality.

Ione Valley, underlaid with coal, shale, and ironstone, is distant 160 miles from San Francisco by rail; it consists of several rich valleys, separated by low barren ridges. The valley soil is rich, dark, and pulverulent loam, where crops seldom fail; they unite metaporphically in the romantic village of Ione. After the grandiose style of America, it is called a City. Wait a bit, and the name may be appropriate. In all California no spot excels the dale and village of Ione in rural beauty, in mildness of climate, and in exemption from disease. Santa Rosa offers inducements also. Coal and iron abound. This village is more advanced; it is by odds the most ornate, and its valley is the most attractive in the State; it is celebrated for its vineyards. The town is famous for its gardens; here hollyhocks bend beneath their load of precious fruit. The almond, the olive, and the pomegranate grow luxuriantly, and the lemon and orange flourish. Here flowers bloom always, and from January to December the air is redolent of their sweet perfume. Santa Rosa is a paradise for singing birds, faithful to their cosy home in winter as in summer. San Francisco, July 15.

S.

COAL AND IRON IN CALIFORNIA.

SIR,—All coals on the Pacific Coast of the United States are lignites; they are bituminous, do not coke, and make three times the bulk of very light ashes that is usual in true coking coals. They rarely make clinkers; their commercial value, as well as practical, is about half that of anthracite from Pennsylvania. Sydney coal from Australia is somewhat more valued; it cokes, has more bitumen, makes more gas, and is much preferred to any coal by the only rolling mill we have. There is but little sulphur in our coals; this remark applies to Oregon and Washington territory north of us. They supply our chief domestic consumption, being near the coast, while ours are in the interior. All coal companies on this coast have been so burdened with excessive over-valuation and fabulous outlay for plant, &c., that the production pays no profit. The whole western part of Oregon and Washington territory appears literally underlaid with lignite, and covered with dense forests of giant trees. The coal wastes much in mining and handling.

The Lincoln and Ione coal field, now supplying fuel to this end of the Great Transatlantic Railway, is worthy of notice; it is 60 miles long, with some breaks. In no part of its range is there any rock top. Of course, mining is expensive, timber for props being scarce and inferior. There are three seams. Mixed in with the coal, and interstratified also with the veins, are beds of white decomposed quartz, so impalpable as to surpass all other cosmetics as a whitening for ladies' toilets; in quantity it is inexhaustible; it overlies and underlies the coal, and is impermeable by water. The coal field is flattish, with shallow undulations. The eastern boundary of this north and south basin, very near the coal, is a range of copper ores, and rich hematite iron ores; it covers the ground far and wide, but there is no exploration of iron ores. The ground rises some 200 ft. in height not a mile from the coal eastward. No rock is visible, but a mass of gold-bearing gravel, with exactly the same white decomposed quartz, as light as chalk, but compact, overlying, and interstratified with the auriferous gravel. For miles this gravel bank is exposed to view by hosts of gold miners who are breaking down the gravel by jets of water under a head of 100 feet, and played through 3-in. holes against the perpendicular bank. In a few years what now is mountain will be level with the plain—a barren and repulsive waste, accursed and unfruitful forever. It is ever thus with the gold miner; he desolates the physical earth, and the moral world he sleeps in corruption.

ANTHRAX.

San Francisco, July 17.

A COAL MINE COVERED WITH GOLD.

"Oh! ye who worship Gold remember how the destroying Angel introduced this idol upon the Earth, scattering ruin on its track; and take heed lest in following its track you find it a circular way leading back to like perdition."

SIR,—The most incredible feature about the Ione section of this coal field is that it is actually covered all over with gold that pays for collecting. A few inches of auriferous gravel is spread over the entire surface. The coal shows no outcrop. Before you find coal you pass through this gravel and some inches of the "pipe-clay," as it is called. In the rain season (November to April) wherever pools of water can be reservoirs miners may be seen washing the gravel by hand. By dexterous manipulation the gravel is passed away, and the heavier gold settles in bright grains at the bottom of the pan. Usually the daily yield to the hand exceeds the ordinary wages of such labour, \$3 a day—say, \$4 to \$6. Many thousands have been realised. The catch would run into millions if there was a stream of water under pressure to hydraulic off the whole surface on a grand scale, as they do at the deep gravel banks, which yield most of the \$25,000,000 a year credited to gold mining.

Geology interprets thus—The coal was first formed. The great auriferous gravel deposits came subsequently, in which occur fossil logs of burned agate. Always pipe-clay accompanies, and on top of all are 100 or more feet thickness of dark basaltic lava, which at one period flowed over most of the vast area occupied by the gold-bearing gravels of California. A thousand feet of this formation has been swept away by floods, leaving the thin layer of gravel and the coal undisturbed. As far as the eye can reach, for several hundred miles, one sees mountains of all sizes dotted the bird's-eye landscape, with the original capping of basalt, and an ornate crest of giant forest trees. Concealed within each mountain are interior lakes and streams of water and millions of granular gold, treasured up for generations to come after—intimating far-seeing provision to perpetuate idolatry of the Golden Calf, and moral corruption of its worshippers, while it furnishes needful motive-power to the moral world. These fragmentary giant mounds attest the cutting down that formed the valleys, and clearly record the cubic yards excavated—so that geologists read plainly, as in printed scroll, the history of many thousand years anterior to human recordings. To the villagers around it is perpetual pleasure for women and children to drive at times over the treeless barrens with a cask of water and a few handless pans in frolicsome quest of gold dust. The fun and exclamatory excitement are continuous till darkness veils the spangled black sands that companion with the gold in the pan. Of a thousand handfuls not one fails to show colour of gold; every draw is a prize, however small—a lottery without a blank. Every few minutes the children exclaim—"Oh, ma, see what I have got."

SIR,—The Salt Lake Tribune of to-day announces that the management of the Flagstaff Mine has changed hands, that Mr. Hunter has cancelled his 10-years lease upon the property, and turned over to the company his interest in the South Star and Titus Mine, together with his bought-up judgments against Mr. Tarbet, for the neat little consideration of \$117,000. In some shape or other the mine has been given over to Mr. Billing, of the Germania, and to Mr. Hunter, while Mr. J. H. Beatty has been appointed manager. The importance of this announcement to the shareholders cannot be over-estimated, and it is essential that they should well consider their position. Mr. J. H. Beatty is a gentleman well known and highly respected here. He is by profession a shorthand writer, and also acts as an attorney, but I have never heard that he has ever had any practical experience of mining. Now, I would ask the Flagstaff shareholders whether they consider that with such gentlemen as Mr. Beatty and his brother (who also I have never heard spoken of as a practical miner), and Mr. Moses Hirschmann as superintendent, it will be fair to declare that the mine still fails to yield remunerative results (and they must remember that although they have had no profits since July, 1873, no less than four-tenths of the capital invested was returned to them previously to that date) that it is the mine at fault, and that the shareholders have not themselves contributed to their non-success by their neglect to give the property the benefit of systematic exploration and miner-like development?

As a practical miner from my youth, and with experience gained in all parts of the world, I have always found that none are so well able to give an opinion useful to those whose money is to be expended as those regularly engaged in mining in the district wherein the mine to be reported on; I would, therefore, say in the case of the Flagstaff Company—Ask the Salt Lake mining men. Ask the leading mining engineers there, such as Henry Sewell, G. Lockwood, E. Doggett, W. Breitmeyer, or J. Clayton, and they will all sustain what I say. The Flagstaff, Reed and Benson, South Star, North Star, and Emma, all on one and the same vein, which vein will be the Comstock of Utah; but even the Comstock of Nevada would go to ruin if managed by men possessing no knowledge of mining, although their re-

AUG. 11. 18

"But, ma, do see my pan—'tis nearly all gold." The world elsewhere affords no excitement at all comparable with this family craze for the golden fleece.

ANTHRAX.

WAR, TRADE, AND COMMERCE.

SIR.—The responsibility of the "war" rests wholly with Russia—the least advanced of all civilised nations—whose conduct since its commencement, as well as her antecedents, it behoves all Englishmen to remember. To us it appears evident that the Turks, in resisting the Russians, are defending our imperial interests as well as their own. In the event of their prowess proving effective they will, it is equally clear, by thrusting back Russia have rendered to England a very great service, whatever may be the result to Bulgarian and other Slaves. Our imperial welfare, from a national point of view, should always be our chief concern. Hence should the Turks by their bravery thrust the Russians back into their own barren country, and thus preserve England from engaging in war, it becomes that section of the British society which retains its national prestige and pride to render the Osmanli every reasonable and substantial help.

War produces excitement, anger, and every other disturbing passion; it delays the progress of civilisation, and lets loose everything which is inhuman and dreadful, and we must all be thankful if England be delivered from the necessity of going to war. Whether the iron-handed law—the rule of grape and canister—is right or wrong is not our present purpose to discuss, but we must place our protests on the file of your valuable Journal as a record against Russian aggression, inhuman atrocities, barbaric mutilation, cold-blooded murder of the helpless, feeble, and innocent, and the ruffianism attending on all their actions and conduct throughout this needless warfare; while we shall rejoice to learn that the Turk through his valour and bravery has driven the Russian, defeated, crippled, and powerless, back into the wilds of his own country; even should the Czar experience the fate of his predecessors in the hope of Caesarism being supplanted by a representative Government, and an enlightened community taking the place of the recently emancipated serfs, whose intelligence and knowledge are on a par with the wolves and bears whose territory they now inhabit.

If this war between Russia and Turkey only affected themselves we might coolly survey the struggle, and however much we might deplore the loss of life and destruction of property, we might perceive a wise ordination of Providence in thus bringing the two Powers together and weakening each other, for the civilisation of Russia and the conversion to Christianity of the Moslems will never become effective and permanent so long as the Czar rules the Muscovite and the Sultan Islam. Both countries require reforms, and they will unquestionably in time become introduced, but not in all probability until both become bankrupt, impotent, and powerless to affect the interests of Europe, or to continue the conflict any longer. It is the manufacture, enterprise, trade, and commerce of this country which feels this war and is affected the most, and with a superabundance of money almost every department of our home industries languish for want of support. There is no spring, action, or enterprise displayed by capitalists. The future is fraught with uncertainty, and instead of progressing as a nation we are most unquestionably at a standstill, if not retrogressive. Our money brings no gains, our manufacturing and mercantile artizans and workmen are half employed and badly paid, wages are lowering, and masters dissatisfied, and with the exception of building and mining no activity or progress is displayed in the labour market, or in the profits accruing to capitalists for the use and employment of their money.

The terrible conflict created by Russia, the most incapacitated of all nations, to effect reforms or to ameliorate the social relations of opposite races, should be the last to interfere with the internal affairs of her neighbours; yet this unprovoked interference has exercised a most baneful effect on labour, capital, and enterprise throughout the great centres of industry of the civilised world. England and Europe are not alone the sufferers, for in America anarchy and confusion prevail—strikes of railway employees, of artizans, and of workpeople alike attest the blow inflicted on commercial progress and social advancement. Still must we acknowledge the American citizen a compeer, and even a competitor, with the President himself. Not so, however, in Russia; at best the mass of the population are simply recently released serfs. In America the citizen is a free and self-acting member of the commonwealth, while in Russia he is simply the tool and instrument of the Czar and his nobles; he is still the serf in all but name.

R. TREDDINICK,
Dealer in Stocks and Shares.

Exchange, 66, Coleman-street, London, E.C.

THE TYNEWYDD COLLIERY DISASTER.

SIR.—The trial at the Swansea Assizes of Mr. James Thomas, the certificated manager of the Tynewydd Colliery, for manslaughter has resulted in what is virtually a verdict of not guilty, the jury having been unable to agree, and the defendant having been, therefore, discharged upon his own recognisance of £200, to appear at the next Cardiff Assizes if called upon on the part of the Crown. The result cannot be regarded as unsatisfactory, for although it would have been very generally regretted had Mr. Thomas been found guilty and severely punished, the feeling is equally general that the fullest responsibility for the safe working of the pit must be thrown upon the certificated manager. On behalf of the prosecution it was contended that Mr. Thomas had systematically neglected all precautions against danger, and to this accusation there was really no answer made on the part of the defence, so that the impression likely to be made on the minds of the jury was that the absence of accident at Tynewydd during the time it had been under Mr. Thomas's management was rather attributable to luck than judgment—hence the disagreement on the part of the jury. That no better defence was offered may have been due to the defendant's failure to appreciate to the full the importance of the certificated manager's position, but as the matter stands it cannot but be considered that the trial has had a proper termination, and will prove a salutary lesson to certificated managers generally.

There were several questions raised in the course of the trial which are well worthy of consideration. In the first place the defence attempted to make a point out of the admission that Mr. Wales had never inspected the colliery previous to the accident. Now, during the whole discussion which took place before the Coal Mines Regulation Bill was brought into the House of Commons, and whilst it was under the consideration of Parliament, the opinion was general that it was undesirable to give the Inspector any control whatever in the management of the mines. A Government Inspector has neither the right nor power to direct what shall or what shall not be done in a colliery unless he has reasonable grounds for believing that such colliery is so carried on that the lives of those employed in it are endangered. The investigation of the cases of alleged dangerous working fully occupies the 24 Inspectors of collieries, and it is alike unnecessary and undesirable that they should devote their time to collieries believed to be safe. Had Oatridge, or any other collier employed in Tynewydd, given the Inspectors the slightest hint that danger was apprehended, no doubt either Mr. Wales or Mr. Cadman would have been in the working places making the necessary investigation within 24 hours. And there is equally little doubt that Mr. James Thomas would readily have carried out any suggestion. If there were no danger in Tynewydd during the last 12 years there was no necessity for the Government Inspector's visit; if danger at any time existed it was within the power of any individual collier to have had the colliery inspected by merely sending a hint, even anonymously, to the Government Inspector. The Government Inspector was entirely free from blame in not visiting the Tynewydd pit, and fully justified (after the decision of the Coroner's jury) in recommending, or at least assisting in, the prosecution after the accident.

The occurrence of the accident left no doubt that a dangerous accumulation of water had been cut, and the ninth general rule says that "where a place is likely to contain a dangerous accumulation of water the working approaching such place shall not exceed 8 ft. in width, and there shall be constantly kept at a sufficient distance, not being less than 5 yards in advance, at least one bore-hole near

the centre of the working, and sufficient flank bore-holes on each side." Now, the Coal Mines Regulation Act ignored to a great extent the old principle of English law, by requiring the defendant to prove that he had not been guilty of negligence instead of compelling the prosecution to prove the neglect, but the defendant is under the disadvantage of having his mouth closed as before. Everyone now knows that the accumulation of water was dangerous, and also where the water was, but the case was widely different before the accident. The fact of Mr. Thomas having assumed possession of the knowledge since acquired may account for the weakness of the defence. It would, undoubtedly, be as difficult to prove "culpable negligence" against Mr. Thomas by direct evidence as it was difficult on his part to prove the absence of negligence, and the additional knowledge acquired through and since the accident has certainly increased this difficulty. It seems surprising that no attempt was made on the part of the defence to show that before the accident no practical colliery manager would have considered that Oatridge's working was approaching a place likely to contain a dangerous accumulation of water, for one would have thought that such evidence could readily have been procured, and would have completely answered the charge.

There are some who contend that a terrible blunder, thereby implying great negligence, was committed in Tynewydd, but there was certainly no evidence brought forward by the prosecution to support that view. It was not asserted that the colliery surveyor's diallings were incorrect, nor has it been shown that the accident is not attributable to the Cymmer old workings being within the Tynewydd boundary. Even the fault may be there for all that is yet known, and if so Mr. Thomas would have been justified in assuming that the weeping was caused by approaching the fault, and not through proximity of old workings. To put forward bore-holes every time one is approaching a fault was never expected, nor is it at all necessary. To expect a certificated manager to make his own surveys or diallings, as well as those of his neighbours' pits, would not increase the safety of pit, and the change in direction or dying out of a fault is an accident entirely beyond the control of a certificated manager, yet very liable to lead him astray. That Mr. Thomas might, and no doubt would, have prevented the accident (had he been acquainted with facts since ascertained) cannot be doubted, but the prosecution adduced no evidence to show either that those facts were generally known, or known at all, previously, so that Mr. Thomas is fairly entitled to the benefit of the doubt, and the consequent acquittal. The trial has not in the smallest degree shaken the confidence of working colliers in Mr. Thomas's ability and judgment, and there is certainly no certificated manager in the district in whose hands they would more readily entrust their lives.

Aug. 9.

CYMRU.

mines:—Dolcoath (21*l.* per month), Cook's Kitchen, New Kitchen, West Frances, South Crofty, West Seton, and perhaps mineral agent for Mr. C. Trelawny, valuer of mining property, the Stannary Court, and a frequent reporter on mines where no monthly salary. There is no question of his ability, integrity, and intelligence, but the question with some is—"Is he rendered worth the money paid?" I leave others to determine this question. Capt. Teague is manager of Tincroft, Carn Brea, & Kitty, and Great Work. In the last-named mine little is done; from the others he receives as salaries in the aggregate £1000*l.* a year.—Camborne, Aug. 6.

NORTH LAXEY MINING COMPANY.

SIR.—Anonymous correspondents are generally regarded with doubt and suspicion. "Another Shareholder" in the company, whose letter appears in your last number, is no excuse to notice it. I will, however, on this occasion just point out of his unscrupulous misrepresentations, as it happens to affect myself. He says that by the issued accounts of the company, London manager's remuneration appears in last year's account 1867*l.*, and all for what? I do not see or hear of many men being held, or much business being transacted in connection with counts." Here is a positive mis-statement of fact, and a complete falsehood. The London manager, office rent, clerk, petty expenses, and postage 12*l.* After deducting all the latter items the balance left for "remuneration" is even inadequate to the work done.

Your correspondent says he does not hear of many meetings held, nor much business being done, in connection with the management, but if he had enquired (which few anonymous writers do) he would have discovered what work was done. The 25,000 shares, held by nearly 400 shareholders, with whom a considerable correspondence exists. There has been for several and still, an immense number of entries for debiting and re-calling, &c., and of course books to keep for the purpose. During past year there were 580 transfers, which necessitated no less than 4640 entries, besides a large number of certificates to make. There has also been much trouble in the issue from time to time of different lots of shares with the bonus ones, which required a deal of work for registration at the Joint-Stock Company, &c., and the addressing of circulars relative to these and the on the mine. There are the alterations at the board meetings at least once in every month, and the general attention to the affairs of the company, including personal interviews with shareholders. I can only say that the remuneration is scarcely equal to that of a young clerk just entering an office. I will, in conclusion, say that no further notice of anonymous writers, but any shareholder is always at liberty to come to the office and into the affairs of the company as much as he pleases.

Aug. 8.

J. H. MURCHISON
London manager and

NORTH LAXEY MINE—MANAGEMENT.

SIR.—Mr. Rowe, in answer to mine, asserts that the weekly were consistent and true, and he proves his statement by saying sinking had been done in each week. Whether there was any intention to deceive I am not prepared to say, but that the share were misled by the reports Mr. Rowe will not deny. The 28 days in a month; from these 28 days four Sundays and four Saturdays must be deducted, leaving 22 working days; from 22 days are to be taken 10 for stoppages by the breaking of the leaving just 12 days during which the shaft was being sunk, or per week. Now, Sir, did Messrs. Snowdon and Rowe deem the page of the sinking for 2½ days per week for 4 weeks a matter of importance, a thing which the shareholders cared not for? My opinion, for a rod to break four weeks consecutively seems unable, and I can only hope that when this occurs again the will say so.

I have watched the reports of Mr. Rowe for many years, and I say I do not think that many mining agents have been more fortunate in their prophecies than he has. In stead of raising or tations by telling us they are on the top of a course of ore, or the expect the bearing part of the lode is ahead, only to disappoint wish they would simply state the real value of the stopes, "North Laxey" or any other shareholder will give his address, we might, with the help of other shareholders, effect a vast improvement in the management. It does seem outrageous that directors should be paid 50*l.* each, and the managing director more, for doing next to nothing. There are about 50 men employed on the mine, and I was connected with one where there were as many more, and only one agent was found necessary. I therefore, that the directors will consider whether one of these sent agents cannot be dispensed with.

A SHAREHOLDER IN NORTH LAXEY.

NORTH LAXEY MINE.

SIR.—With reference to the correspondence in the Journal 28, and again in that of the 4 inst. on this mine, permit to observe that I feel sure that a great injustice has been done Capt. R. Rowe, of this mine. I hold a very fair interest in mine, am personally acquainted with Capt. Rowe, and believe to be the right man in the right place, or should at once be interested. I have spoken to him about the mine, and know his interest. I have spoken to him about the mine, and know his confidence of bringing it into a dividend-paying condition. I therefore, confident that no man has (heart and soul) the well-being of the mine under his consideration more earnestly than himself, he justly says he is "the largest shareholder in it," and that this alone would induce him to use his utmost exertions to the mine into a dividend paying condition (which I believe to be shortly done) and to put his shoulder to the wheel. Where correspondent is correct and wise in what he says is that part of his letter in which he complains of the heavy expense that the directors continue to draw yearly a large sum of money from the cash account at the present unpaying condition of the mine. Surely the directors could now wait for their emoluments until the mine is working at a profit, and make a first charge for it. It would indeed be a wise step, and for the advantage of directors and shareholders.

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TREBEIGH CONSOLS—PORTABLE ENGINES.

SIR.—There is a class of men to be found that will not be convinced of their mistaken notions of things till it is too late to do anything about them. This seems to be the case with the management of Trebeigh Consols. Apparently a more reckless manner of spending money could not be suggested, and that in the face of the strong opposition and advice. Some of the Cornish "bal cappins" are the most men under the sun; there is no perusing them to get out of old groove in which they have been in the habit of moving, must have their perpendicular shafts and long cross-cuts, no matter what they cost, nor whether there is anything to warrant such a lay. Any man who has his eyes in his head might have seen that would be the result at Trebeigh Consols by expending much and money in needless work. Twelve months have passed and 4200*l.* spent, and no nearer the mark than at the commencement, for they are now commencing what should have been done first. If they had done what the writer, with others, would have advised—put up a small portable engine, it would have enabled them to have sunk about 30 fms. on the lode—that would have proved the mine to a greater extent by this time the work might have been completed; and the lode proved as productive as was anticipated ore enough have been raised to have paid for the whole of the outlay, of having spent 4200*l.*, and proved nothing. In Cornwall a prejudice exists against portable engines, because they are

and should the mine not turn out profitable when such engine has been worked to the extent of power, it will be shut up and all hands out of employ; and no doubt this was one reason why Mr. Hinchliffe and others were not listened to.

ECONOMY.

MINING IN NORTH WALES.

Sir.—Being a shareholder in Pant-y-Mwyn Mine I was very pleased to notice the remarks of "J. S." in last week's Journal. Having recently visited this mine, and spent some time in examining the workings underground, I can endorse the opinion of your correspondent, "that this will be without doubt one of the largest and most profitable mines in the Principality." The engine-shaft is being sunk in a rich lode, containing lead of high percentage. The shafts are also being driven east and west on the course of the vein, which is extraordinarily productive of lead ore. In fact, the present development appears to be one continuous run of productive veins, and in a short time the returns may be permanently increased. The present returns would be more but for the insufficient dressing-floors and machinery, but provisions are in progress for erecting Green's Patent Self-acting Machinery, and then large regular returns will be made. Why the reports of the progress and prospects of the mine are not regularly published in the Journal can best be explained by the directors. All of them are large holders of shares, and make periodical visits to the mine. It is evident they wish not to puff the mine so as to dispose of their shares, nevertheless I think it would be advantageous to all concerned to circulate this important information amongst the public. This great district is very being in the western portion of the property speaks well for the set, which is of large extent, and containing several other east and west and north and south lodes.

It may not be generally known that some 25 or 30 years ago this property was worked as the Mold Mines, and yielded thousands of tons of lead ore. The present workings are merely preliminary while funds are raised for a thorough development of the mine. The celebrated, and much respected, Mr. John Taylor has written on this property, giving some important information to the immense wealth left in the deeper workings of the old mine, which had to be abandoned through the inadequate capacity of the pitwork, &c.

Now the matter has been introduced no time should be lost in letting those who have capital to invest to visit this splendid property, and see for themselves. Undoubtedly as the returns increase the property will become more valuable, and an extra effort should be made to raise sufficient capital to develop the old mines. There are other properties in this neighbourhood deserving particular attention, which, with your permission, I will reserve for another

A MINER.

MINING IN NORTH WALES—PANT-Y-MWYN.

Sir.—In reply to your correspondent "J. S." I shall be glad to give him such information as he requires, so far as possible, with reference to this mine. His opinion with regard to its prospects now being quickly verified, and it will, doubtless, ere long, as you mark, be one of the largest and most profitable mines in the Principality. The directors have not sent reports to the Journal for this reason, one being, as is hinted by "J. S.", that it is not yet a market mine. The letter, however, I will submit to the directors, and the result probably will be a report sent for insertion in your influential Journal, so that your readers may information as to its progress and prospects.

Liverpool, Aug. 9. — J. C. ARVES, Secretary.

WHEAL GRENVILLE—MACHINERY.

Sir.—With reference to my letter in the Journal of last Saturday, you have been misinformed as to the quality of the pumps purchased for the use of this mine, as ample evidence has been produced showing that they are all that is desired, and fully equal to the duties required of them. At the same time I wish to state that I had no intention in publishing the letter referred to, and any reflection whatever upon the committee, and considered it was performing simply my duty in replying to a "Distant Shareholder" letter, although an anonymous communication, and such terms as I was led to believe I was justified from information received.—Cornhill, Aug. 10. — T. B. LAWS.

WHEAL GRENVILLE—THE MATERIALS.

Sir.—I drew attention to the materials reported as being used at Wheal Grenville in the Journal of July 21, to which Mr. Laws replied the following week. Mr. Laws, the secretary, conveys to a great extent my informant's statement, and I repeat that there would surprise me less than our getting a grand smash up, though Mr. Hodge does not like the word. Mr. Laws says he is inclined to believe it would have been more to the company's advantage if new pumps had been used instead of old fashioned material bought from one of the oldest mines in Devonshire, and so say I. I cannot wait and see which is correct. The shareholders' attention has been drawn to the matter, and I consider I have done my duty in at least ventilating the subject, and I hope someone will bring before the next meeting and elicit the plain facts, and so settle the mind of—

A DISTANT SHAREHOLDER.

WHEAL GRENVILLE—THE MATERIALS.

Sir.—I could scarcely believe it possible on reading the remarks of "Distant Shareholder" that the committee of this mine had sanctioned the buying of old materials, to be used in conjunction with the new engine now being erected. I have now, however, reason to believe such to be the fact, it being corroborated by our secretary, Mr. Hodge, in his reply seems to say that shareholders should interfere with their own business. I am well pleased to find that we have been annoyed, fully believing as I did that we were having new pumps, &c., instead of which it now appears part are old and second-hand, bought and brought from one of the old mines in Devonshire—so wrote our secretary. Who can be astonished, then, if we do get a breakdown, as hinted by a "Distant Shareholder." I think myself this is more than likely, though no one will be more pleased than the writer if all works satisfactorily, and that our old pumps turn out, as Capt. Hodge expects—better now, but I suggest, in conclusion, each shareholder should investigate the matter for himself without bias, and fearless of agents committee, looking only to his own interest.

W. LEACH.

CORNISH MINING, AND BORING MACHINES.

Sir.—I have watched with great and increasing interest the introduction of the boring machine into Cornish mines, and am satisfied that the use of this valuable addition to Cornish mining machinery will effect a great revolution in deep mining. So far the results of employing machinery in the place of manual labour for boring are as follows:—With a single Barrow drill one of the Dolcoath ends being driven about four times as fast as heretofore, with a saving about 20 per cent. cost; with four Beaumont machines at Carn Brea they are enabled to proceed 20 times as fast, but with what it is not known. It is not my intention to compare the advantages of the various machines, but simply to show how the principle of rock boring by machinery affects the mining interest in the county. For a moment let us look at the chief advantages

of rapidity. That which formerly took years to accomplish can now be driven in a few months. Hence important discoveries can quickly be made, rich ground speedily laid open, and the worthlessness of poor ground soon proven.

Quite a half of the winze sinking, which formerly occupied so much time, will be dispensed with. The majority of winzes were sunk in order to ventilate the ground, but we find that the compressed air, when liberated, efficiently ventilates the shaft or end,

The temperature of hot air is considerably reduced by the air brought down from surface, so that men can work harder and longer shifts for the same pay.

4.—Instead of sinking 10 or 12 fm. lifts, we can sink 15, or even 20, thereby effecting a great saving, as a proportionately less number of ends will be required.

Thus, then, the old system is done away with, and all things must become new. Even our old mode of blasting or "spending ground" has been shown to be defective; and, instead of taking out the ground with small blasts of powder, we learn the wisdom of first making a conical excavation in the centre of the end, with comparatively large blasts of dynamite or some other strong explosive, and then "squearing" by means of side-holes. The question arises, what is the worth of all these advantages? My opinion is that they are worth much more than is generally supposed. To our deep mines north and south of Carn Brea Hill, with their wide lodes and hard rock, or to any other similar district, I suppose the new system of working would be quite equal to an advance of 10/- per ton for tin. In the St. Just and Wendron districts, where the lodes are exceedingly small and ground comparatively easy, of course, the advantages will not be so great. In these mines a boring-machine would be almost useless, except for occasional cross cutting or shaft-sinking, for it would necessitate an end being carried much wider than would otherwise be necessary. Doubtless, Sir, within the next 12 months we shall see many more boring-machines used for exploring the hard ground of the Camborne and Redruth mining districts.—Camborne, Aug. 8. — OBSERVER.

NEW CONSOLS.

Sir.—This mine is being wound-up under the supervision of the Stannary Court—so I have been informed. I hope, therefore, that the management of the directors will undergo a full investigation. From what I can learn it is the intention of some parties to endeavour to get possession of the mine and the property thereon, and only 10/- in £1,000 has been offered to the labourers, of which they have already paid 4s. Such conduct should certainly be thoroughly scrutinised, that it may be ascertained how far it will bear the light. So far as I can learn 40,000/- was advanced to carry on the mine, and a mortgage was got of it, and that 300/- per month interest has been received. I have been informed that the money so advanced was the proportion of cost on some shares in the mine; if so, how could interest be charged on the advances? I may not fully understand the facts, but it is generally believed that a mass of irregularity is likely to come to light unless the liabilities are paid in full.

Callington, Aug. 6. — A CREDITOR.

PARYS MOUNTAIN.

Sir.—In the Journal of July 28 reference was made to the expected cutting of the Morfa-du lode, which has proved so rich in adjacent ground. It appears by the latest news that the 90 cross-cut is now in imminent proximity to it, another rich branch having again been cut, and the ground has become more sulphurous, with indications of a great change at hand. The 80 east is also expected to strike the ore ground so rich in the level above. The aggregate of copper ore is excellent, already being worked—37 tons of copper and about 11 tons of sulphur per fathom. We find that 300 tons of copper ore were sold at the last sampling, giving some idea of the vast resources still to be found in this great enterprise, and with the apparently certain prospects of cutting the mass of ore found above, and which yielded 5,000,000/- profit, it need not be doubted that Parys Mountain must again become one of the greatest copper-producing properties of Great Britain. What is hoped for, believed in, and most needed for Parys Mountain in the present time is a rise in the copper standard, but even with the cutting of the Morfa-du lode this is not absolutely essential to establish its prosperity.

SHAREHOLDER.

IMPROVEMENTS IN MINING.

Sir.—Will you permit me through your valuable Journal to enquire if any correspondent will be willing to furnish reliable information on a point of public interest just now to possible investors? A prospectus is in circulation proposing to form a company for working mines with the assistance of patented processes, the inventions of Mr. T. J. Barnard, which are said to extract the metals so completely and cheaply from the ores as to make what have hitherto been treated as refuse valuable, and profitable mines doubly so, besides securing as merchandise the sulphuric and other acids, sulphate of soda, &c., which have hitherto passed away in the smoke of the smelting furnaces. If some of your readers will vouch for the practical operation of these novel processes anywhere during a time sufficient to test their financial success they may confer a favour on a number of those who may be timid, though desirous of becoming—

[For remainder of Original Correspondence, see to-day's Journal.]

THE WILD DUCK, OR SPORTSMAN'S ARMS.

"We hadn't time last mitten, Uncle Henny," says Jan Temby, to say much about the present management of our bals; and if I don't mistake, Jan Jewill will be able to say a few words on that there subject, for Jan was a keen old tributary, and perhaps a little bit of a kitter in his day." "It's a mighty long time," says Jan Jewill, "since I was a boy rullen underground. I've seen men, and done it myself, shutten with straws, rushes and quills, long before the safety-fuse was invented by Mr. Bickford, of Tuckmilling. It was a grand invention, that was; and although the old gentleman didn't enjoy it much, it was a fine thing for the he left after'n. I mind very well when he wot busy trying experiments. At that time T. Davey, a very handy man, was a tributary in Dolcoath, and it is said—how true I don't know—he invented some of the machinery, and had a share; but what Capt. Peter Grangey invented nobody could never find out, but you would travel a long way before you would find another man like Capt. Peter. But I'm running away from my story, men—a word, however, about the hours worked in a week in my young days and now. Day core, winter and summer, we had to rise about five in the morning, so as to have breakfast and be to hal, changed, and ready to go underground at the seven o'clock bell ringing. We never got up till bell ringing, six o'clock in the evening. All the tools was brought up in slings on our backs, and by the time we had changed—in a miserable hovel cauld a changing-house, not wind-tight nor water-tight, and if our el-thes wor wet through in the morning the wor wet to put on again in the evening—and took our tools to the tool shop to have them ready for next morning, and got home and had a bit of supper, it would be between seven and eight o'clock in the evening. These wor the cores we and the rest of the tributaries used to work, from the beginning to the end of the year. We had no holidays, railways wor not made, so there wor no excursions. In the days you would know a working miner from cap'n, but now you wouldn't, for the are all gentry in dress; and a stranger, looking at week-day excursions in all directions, asked a per-on the other day 'where the poor people lived?' We used to work twice so many hours as the people's work now, and the people now spend twice so much in dress and living as they ded then; and if tin keep down to 40/- per ton the'll have to play another tune, even if es upon Cudden Edmond Wen-non's old B clarionet. The underground caps in the days used to do most of their dialling and calculating work in their night core, and didn't stick up a long candle in the count-house and go home and have a good nap and be there again in the morning before the day cap'n; but tes time for me to stop." "No, no," says Jemmy Dowa, "less have some more, Jan; but Uncle Henny I'm sure a must be so dry as fire. So take a good swig, Jan, of London stout, for it is meat and drink too. We discussed the point a bit last mitten about the management of the biggest and richest bals ever known, and how it was done by a manager and purser, and never got into debt or difficulty. Now," says Jan Jewill, "we have managers, purser, committees, boards, and I don't know what all. It is an old and true saying 'too many cooks spoil the broth.' Well, the committees and boards are the cooks, and they've made up so many new dishes lately that the adventurers don't know whether they're eating fish, flesh, fowl or red herring; but after all there must be great pleasure in having to pay for these expensive dishes. One man said he was sure there was 'white bait' amongst the dishes."

"Very likely," says Jan Temby, "but what is your plan, Jan

Jewill?" "My plan," says Jan, "is this here. In all the great and little cost-book bals send out notice to every adventurer that a mitten would take place on the mine 'that day month,' when it would be settled by a majority of the shares that the committees and four weeks months will be knocked in the head for ever, and that in future there shall be a manager, purser, and underground cap'n to manage the entire concern. That the owner's account shall take place 'every two months' on the mine, and supposing the account to be held the end of July, or Aug. 1, all accounts should be charged up to the end of June and paid, so that every adventurer shall know at each mitten that there is no liability but the one current month." "Now," says Jan, "a bal managed like that with a good honest tattie-pasty for dinner, would be better than all the high cooking of outlandish dishes." "I quite agree with you Jan," says Cousin Will, "for we have plenty of respectable men, honest, and true as steel, to manage our mines without committees or directors, but as to the four-weeks month, except for monthly men, it is the most insane movement ever heard of in a civilised country; give every man a fair price in sight without reference to the past, extent for one, two, or six months, and men will have an object in honest hard work, but now they have not. What can a man do in four weeks?" —From Cousin Jack's Unpublished MSS.

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week the market has been firm, and a very moderate amount of business transacted. In particular cases it may happen, from more shares being offered than are wanted, that lower prices may be reached, and probably only temporarily, but there can hardly be any doubt that investments generally at present prices must pay well. In shares of iron and coal concerns Bo'cklow, Vaughan, A., have advanced 20/- per share on the week, and 1s. 6d. more is offered for Monkland; while Ebbw Vale are reduced 20/-, Benhar (new), and Marbella each 5s., and Bonhain (10/- paid) 2s. 6d. Benhar (old) are at 8 to 8½; ditto (new), 7½, sellers. Bilbao, 19½. Bolekow, Vaughan, B., 35½; ditto 5 per cent. debentures, 7½. 100, Cardiff and Swansea, 2s. Carnforth, 11½. Consett, 19½. Darlington, 12½ to 11½ dis. Glasgow Port Washington, 3 s. to 4s. Henry Briggs, A., 19 to 14, ditto, B., 7½. John Bagshaw and Sons, 6s. John Brown and Co., 5 per cent. debentures (1880), 10. Lynwy, Tondu, and Osmore, 5. Monkland, 5s. 6d. to 6s. Nant-y-Glo and Blaina (def.), 30s. New Sharston (pref.), 7s. Norwegian, 40. Oakham, 6d. Pelestock, 11½ dis. Scottish Australian, 35s. to 40s.; ditto (new), 6s. 100, Tredegar, A., 16. Tunbridge, 9. Ulverston, 11½. West Cumberland, 5½. West Mostyn (def.), 5. Whitwick 6 per cent. (pref.), 10½. Workington, 15. Shares of foreign copper concerns continue very steady. Huntington are 1s. 6d. higher. Tharsis unaltered. Frontenac Lead are at 12s. 6d. Huntington, 26s. to 27s. Pannellino, 15s. to 25s. Rio Tinto 5 per cent., 5½. Yorke Peninsula (ordinary), 4s. to 6s.; ditto (pref.), 21s. 3d. ex arrears of interest.

In shares of home mines business has been very quiet. Glasgow Caradon are wanted at 6d. advance; new shares unaltered. The reports from Leadhills are very good, over 300 tons per month being raised now. The 10 per cent. debentures fully secured by a first claim on the entire property of the Bampfylde Mining Company have been well taken up, and it is satisfactory that the property is likely to be developed to the success it has always indicated. The Langness (Isle of Man) is being steadily worked, and is, undoubtedly, the best investment in new copper mines at present offering. Aberdare are at 11s. Bampfylde, 10s. Bryn Alyn, 9. Bodridris, 20s. Clementina, 4s. Combe Martin, 8s. 6d. D'Erresby, 18. Devon Great Consols, 7s. 6d. Dolcoath 25½. Glyn, 7s. to 9s. Gunnislake (Clitters), 30s. Great Maxey, 20½ to 20¾. Great West Van, 6s. Killifret, 1s. 3d. 9s. Leadhills, 5½ to 6s. Llanwrst, 4s. Liangau, 9s. Mynydd Gorddin, 5s. Mwynd, 4s. 5d. New Broughdy, 30s. North Maxey, 16s. 3d. Pateley Bridge, 40s. to 45s. Parys Mountain, 9s. Prince of Wales, 6d. Penrhyn, 6s. Roman Gravels, 9½ to 9¾. St. Patrick, 9s. Talsarnock, 40s. Talyfont, 10s. Tanyfron, 20s. Ti-croft, 12. Tankerville, 6½ to 6¾. Van Consols, 7s. 6d. to 10s. West Ashton, 16s. West Chiverton, 14. West Combe Martin, 8s. 6d. West Tolgus, 7s. Wheat Agar, 5s. Wheat Bassett, 7.

Shares of gold and silver mines are quite neglected; with few exceptions, investors would do well to part with them if practicable. Antiqua are at 11s. 3d. Cedar Creek, 7s. 6d. to 10s. Chicago, 45s. Chontales, 6s. Colorado Terrible, 37s. 6d. Eberhardt, 5½. Emma, 1s. 3d. to 3s. 9d. Exchequer, 5s. Flagstaff, 57s. 6d. Frontino, 57s. 6d. Last Chance, 10s. to 15s. Pestarena United (Gold), 3s. 9d. Richmond, 6½ to 6¾. South Aurora, 4s.

Shares of oil concerns continue well supported. Young's Paraffin have advanced 3s. 9d., Uphall 28s., 6d., and Oakbank 2s. Price's Candle are at 12. Runcorn Soap and Alkali, 6s. 6d. Marbella, 30s. In shares of miscellaneous companies there has been no new feature. At the meeting of Milner's Safe Company a dividend of 5 per cent. was declared, 15½%, placed to reserve, 2000/- written off preliminary expenses, and 4000/- debentures paid off. It has been decided to dissolve the Goole Engineering and Shipbuilding Company. Bridgefield and Victoria Salt are at 80s. Diamond Rock Boring, 37s. 6d. Earle's Shipbuilding, 26 dis. General Sewage, 8 dis. Gloucester Wagon, 13. Hopkins, Gilkes, and Co., 8½ dis. London and Glasgow Engineering, &c., 23 to 27. Milner's Safe, 9s. Palmer, A., 15½ to 16½. Shares of chemical companies are quoted as follow:—Bede, 17½; Langdale, 6s. 9d. to 7½; and Newcastle, 5s. 6d.

Subjoined are this week's quotations, &c., of mining and metal shares quoted on the Scotch Stock Exchanges:—

Capital	Dividends	Description of shares	Last price
Per share	paid per annum.		
share up	Previous.	Last.	
£10 ... £7	£8 ½	£6 ½ Arniston Coal (Limited)	71. 16s. 6d
10 ... 10	6	Ditto	7s. 6d.
10 ... 10	10	Bolekov, Vaughan, and Co. (Lim.) ... A.	55 ½
10 ... 10	10	Cairnbarrie Gas Coal (Limited)	8 ½
10 ... 10	nil	Chillington Iron (Limited)	70s.
10 ... 29	nil	Ebbw Vale Steel, Iron, and Coal (Lim.)...	8 ½
10 ... 5	nil	Fife Coal (Limited)	10s.
10 ... 10	nil	Glasgow Port Washington Iron & Coal (L)	35s.
10 ... 10	—	Ditto Prepaid	3 ½
10 ... 10	—	Lochore and Capledene (Limited)	32s. 6d.
10 ... 10	nil	Marbella Iron Ore (Limited)	55s.
10 ... 10	nil	Monkland Iron and Coal (Limited)	55s. 6d.
10 ... 10	5	Ditto Guaranteed Preference...	5
100 ... 100	nil	Nant-y-Glo & Blaina Ironworks pref. (L)	19 ½
6 ... 5½	nil	Omoa and Cleland Iron & Coal (L & Red.)	20s.
1 ... 5	15	17½. Scottish Australian Mining (Limited)	37s. 6d.
1 ... 5s.	15	Ditto New	7s.

[AUG. 11, 1871]

AUG. 11, 1871

operations at once by working out the coal on the mine system, the coal being only a few feet from the surface. It seems that the lands were at a former period explored, but were then considered to be of little or no value.

MINES AND MINING IN THE LAKE DISTRICT.—The interesting paper on this subject by Mr. JOHN POSTLETHWAITE, read before the Keswick Literary and Scientific Society some three years since, has been printed in an enlarged form as an illustrated pamphlet. The author states that his object is to perform a patriotic duty, by correcting a very prevalent, but erroneous, notion respecting the mineral deposits of the Lake district—that the Silurian rocks of the Lake district contain no mineral deposits of value, and consequently, that all mining operations in this district must prove unsuccessful. And this opinion has been supported and circulated in the writings of scientific men, one of whom he quotes—Mr. H. A. Nicholson, M.D., F.G.S.—who, in his "Essay on the Geology of the Lake District," says that "The Skiddaw slates are often traversed by veins of quartz, not unfrequently metalliferous, though seldom, if ever, repaying the cost of working." But the historical and descriptive accounts of Goldscope, Yewthwaite, Brandley, Dale Head, Kelton, and Knock Murton Mines, in the latter part of Mr. Nicholson's admirable essay, will prove that the Skiddaw slates contain large and very valuable deposits of lead, copper, and iron ores. There are also in this stratum other mines of less importance, such as Old Brandley, Barrow, Thorthwaite, Loweswater, Woodend, Gatehill, and Glenderaterra, from which large quantities of ore have been raised, while Coniston, Greenside, and the Plumbago Mines in the green slates, and Roughtengill in the porphyritic syenite of the Caldbeck Mountains, will rank amongst the best mines in the North of England. Since 1865 no less than seven smelt mills and two iron furnaces have been erected for the purpose of smelting the ores raised in the Lake District. The former were erected at Keswick, Dale Head, Stoney Croft Gill, Braithwaite, Thorthwaite, Roughtengill, and Greenside; and the latter at Langstrath and Langdale. This fact needs no comment, as it proves beyond doubt that large quantities of ore have been raised in the district. A large number of facts are brought together in the essay, and there is an excellent synopsis of State papers relating to the mines in Newlands and smelting works at Keswick. The essay is altogether well worth reading.

Meetings of Public Companies.

AUSTRALIAN MINING COMPANY.

The annual general meeting of shareholders was held at the Guildhall Tavern, on Monday, July 30,

Mr. HENRY COLLIER in the chair.

The SECRETARY read the notice convening the meeting, and the minutes of the preceding meeting, which were confirmed. The report and accounts were taken as read.

The CHAIRMAN said the most important point was that mentioned in the latter part of it, that was the letter which was expected from Mr. Davenport. The letter came to hand as anticipated, but no money arrived with it, and the directors would not, therefore, be enabled to pay a larger dividend than £s. 6d. per share. A dividend of that amount had now been declared, and would be paid on and after August 1.

A SHAREHOLDER asked if that would be an interim payment or a dividend for the whole year?—The CHAIRMAN replied that it would be a division of all the money in hand; but if they succeeded in getting any larger amount for the arrears of rent which might be received, and there was sufficient in hand to make it worth while, the directors would make a further distribution. The weather in the colony had been so bad that the tenants had increased their arrears of rent to the extent of 700L He hardly knew what to say as to the prospects of the future. The past season had been an exceptionally bad one, and instead of further diminishing the arrears, and paying a dividend of 2s. 6d. (as was paid last year), they had had to fall back. The 2s. 6d. dividend, paid last year, quite absorbed all the available resources, so that there was no balance to assist the revenue of the current year.

A SHAREHOLDER asked if there would be any objection to read Mr. Davenport's letter?—The CHAIRMAN replied by reading the letter referred to, which was dated Adelaide, June 14. From this, the Chairman said, the shareholders would see there was nothing to justify the hope that they would immediately have any further amount of the arrears; but if any large amount should be received the directors would be happy to divide it. Having invited enquiry, the Chairman moved the adoption of the report and accounts.

Mr. F. COLLIER seconded the motion.

Mr. WHITE said it was a matter of regret to the shareholders, as it was no doubt to the directors, to have such a report as that now presented. Hope had been sown for many years past, and as continually had they reaped disappointment. He had hoped, from getting a dividend of 2s. 6d. per share last year, that the tide had turned in their favour, and that they were likely this year to get 3s. or 3s. 6d.; and this was only a natural hope, looking at the general prosperity of the colony, and at the fact that the Australian banks, in one of which he was interested, were paying good dividends. Then the Australian Agricultural Company were also successful, for their shares had risen from 20L some years ago to 70L or 80L at the present time, and yet this company, representing a large territorial interest, was not progressing, but had, on the contrary, gone back 40 per cent.; and there was no prospect of any better state of things until this time next year, when perhaps there would be another crop of disappointments. They had been told that one property was doing well, and another property was doing well, and their agent, when he visited this country, was congratulated, and was going back to the colony to see how the large arrears of rent arose. He thought if these tenants really could not pay they should be allowed to go, leaving the land for people who would pay. He was sure this state of things could be satisfactory neither to the shareholders nor the directors. Then, the expenses in London were just the same as they had ever been—600L a year for the magnificent return of about 3000L—and he suggested that by some means or other the expenses should be diminished. He was in favour of paying directors well, but he could not see that there was much work for the board to do in London. (Hear, hear.)

The CHAIRMAN replied that all the matters touched upon by Mr. White were interesting. He could, in answer, say little that was satisfactory. Their tenants were not wealthy men, and it was hopeless to expect to get sound men to come on to their property, while the Government was selling land so cheap that purchasers could have it almost for the rental. There were rich portions of land on the properties, but much of it was poor, and the prospect of getting any considerable increase of rents until all the Government land accessible of a like quality was disposed of was not a very hopeful one. In the bad seasons they must be prepared to lose some of their rents; but he thought the longer the tenants stopped the better they would be able to withstand the seasons, as they would gradually improve the land and its maintenance. Then, with respect to the management in Australia, the directors would look upon any change as a very important thing; for when Mr. Davenport was in London the directors had been very favourably impressed with his intelligence and ability to manage a concern of this kind. He did not see that the expenses could be reduced to any extent.

The CHAIRMAN, in reply to a question, said the deed of incorporation provided that there should be three auditors, and that their remuneration should be 10 guineas each.

Mr. F. COLLIER remarked that although the dividend was only £s. 6d., the position of the company compared favourably with that of a few years ago, when there was no dividend at all, and when the shares were quite unsaleable. He hoped and believed that the company would improve as the colony goes on increasing in prosperity. He also bore testimony to the ability and industry of the company's agent in Australia—Mr. Davenport; and referred to the fact that while Mr. Davenport was visiting England his nephew had well attended to the interests of the company.

After a short conversation the report and accounts were adopted nem dis.

The retiring directors, Mr. F. Collier and Alderman Sir C. Whetham, were re-elected, as were also the auditors, Messrs. Grove, Franklin and Ehrenberger.

The CHAIRMAN, having referred with regret to the absence, through illness, of the Chairman of the company, Lieut.-Col. Palmer, moved a vote of thanks to Mr. Davenport and his nephew for their exertions in the interest of the company.—Mr. F. COLLIER seconded the motion, which was carried.

The proceedings terminated with a vote of thanks to the Chairman and directors.

RICHMOND CONSOLIDATED MINING COMPANY.

The ordinary general meeting of the shareholders was held on Friday, Aug. 3, at the City Terminus Hotel, Cannon-street.

Mr. JOHN ELLIOTT in the chair.

Mr. H. AKERS (secretary pro tem.) read the notice convening the meeting, and the minutes of the last meeting were then confirmed.

The CHAIRMAN said: At the time, gentlemen, this meeting was arranged for to-day we were under the expectation that the trial would have been over, and that we should have been able at this meeting to have announced to you the result. It has lasted very much longer than we anticipated, and it is likely to last another week or two I am afraid. We have a cable to hand this morning, which is very satisfactory, and in fact everything we have received since the commencement of the trial I think has tended in the minds of the board to establish the impregnable position that they occupy. I have never had myself the slightest misgiving as to what the result would be. I think our past efforts and the past steps that we took will be triumphantly vindicated by the result of this trial. At the same time it is obvious that while this trial is going on it would be very impolitic for anything should occur at this meeting or be said here that might be cabled over to the other side in damage our proceedings. I think we must all, if we have the common interest of each other—as partners in this concern—at heart, be content to keep our own feelings in abeyance, whatever they may be during the progress of the trial. I am content for one to do so, although I have been eagerly looking forward to this opportunity of going into many questions that I desire to speak upon at the right time, still I am content to wait my opportunity for the common good. Gentlemen, it is not my intention to continue in the chair after this meeting. I have had six years work, very hard work, and it is now absolutely necessary for my health's sake that I should withdraw from the position I have occupied in your service. Indeed, this necessity existed some time ago, but I did not announce my intention as I should have done from the reluctance I have to relinquish the management in which I and my friends are so largely interested. However, time has confirmed that intention, and I propose to carry it out to-day. (No, no.) I think, therefore, that your wiser policy to-day will be to consent to the adjournment of this meeting. (Hear, hear.) I think you may safely adjourn it to a date within a fortnight, because all our testimony is now in. Mr. King has always been our great card, and on his evidence alone I have always relied as decisive upon this question for this reason:—As you are aware, he was the first man of great eminence who gave us the remarkable information, or prediction I may call it, of the state of your mine, and he can now point triumphantly to the results as illustrative of every word he said. In the first place his private character is so high, and his talents so great—so admittedly great: in fact, he holds one of the highest positions in America, that I was quite satisfied his testimony would suffice. I was, therefore, pleased to hear that on going down into the mine his opinion on our property completely confirms Mr. Probert's previously expressed views. The last cable message to hand states: "King's testimony decisive as against opponents lode theory; our case in; tomorrow rebuttal, next week the argument."

A SHAREHOLDER: To-morrow; what, Sir?

The CHAIRMAN: Rebuttal; that is to say, the counter-case. They will attempt to criticise the evidence we have put in, and then next week the argument will be heard. In a recent letter Mr. Probert says—"We have been careful to select such experts so that our opponents in case of defeat won't have any chance of appeal." Speaking the other day to an American mining engineer of position and experience on this subject he asked me on whose evidence we relied for our case, and when I told him he said "You have got the pick of all America." Now, these men have all given evidence that is perfectly conclusive. We have a mass of evidence here—I will read it to you if you wish—all corroborative of the facts of our case. I can only contrast the remarkable clearness of the evidence given by our experts as against the fanciful theories put forth by those of our opponents. This lode theory of theirs was got up at the last moment. However, I will not go into the question now, it might be dangerous. But this I will say, all our law positions are unassailable. The agreement we made in 1873 stands untouched—in fact, they have virtually thrown it over, and they have rested this case entirely upon this lode theory, and in regard to that you have heard from the message I read to you Mr. Probert says King's testimony has completely smashed their case. If you wish me to read all the cables we have received I will do so, but they express opinions that may not, perhaps, be wise to go into. Indeed, I may assure you it has only been upon that ground they have not been published. In these messages Mr. Probert gives his views upon each expert's evidence as they go on. If you wish them read here they are.

Mr. HURST: It will be quite sufficient if you give us just the substance of them in a few words; what you believe, having examined them carefully, is the view they convey.

The CHAIRMAN: When I read them the view conveyed to my mind was that our opponents had not the shadow of a case, and I think I have earned the right to give an opinion on this matter, because I have followed every scrap of writing that we have had about the mine. I have studied every plan of the mine that has come over; I have got it as clearly and distinctly in my mind as though I had had the thing before my eye the whole time, and I can see the bearing and force of every argument used, and I tell you they have not touched our case. The theory they have started is so wild and untenable that I should not have valued their case at a brass farthing, and when such men as King, and Bone, and others whose testimony we have secured, give us the same views, I think I have the right to tell you that our case is unassailable. The only man we care about was Prof. Raymond, one of the United States Commissioners. I have got two volumes of his here—you may examine them if you please—and you will see that these give contrary opinions to those he has deposited at the trial. He is a geologist, and has taken up a fanciful view of the question of mining right, a view I may say, such as the last never contemplated, and the lawyers I am confident, will regard in the same light. It is a view that every miner will tell you is perfectly untenable, but the absurdity of it is at once shown by the fact that if tenable you might have a district 20 miles wide all in one lode. We have the most complete maps sent over, and I may say you have in your possession what no other mine has—full and detailed plans up to the last moment, not only of your own workings but of those of your neighbours as well. They have, of course, cost us a good deal of money, if you wish to have any information about it they are quite at your service. Am I to gather, gentlemen, that you are content that this meeting should be adjourned. Perhaps to put the meeting in order, I had better move the adjournment of the meeting.

Mr. TAYLOR: Will this day fortnight suit the gentlemen present?

Mr. CUTHBERT: I think, Mr. Chairman, there are certain things that might be done at this meeting without any disadvantage to the shareholders. In the first place, the Chairman has announced his intention of retiring from the board, and, therefore, all the business we need transact to-day is to elect two directors, of which full notice of five clear days has been given. I must say that the Articles of Association present a very curious state of things. Notice of the holding of any meeting is to be given seven clear days beforehand, and then you have to give five days' notice of the intention to propose the election of a director. Now, if I had not been stopping at home, having been told that the notice of meeting was coming, I should not have known anything about it until too late to notify my intention with regard to the election of a director. As it was I received the notice only on the Friday morning, and then in order to be in time it became necessary to send up my notice of the appointment of new directors by the same day's post. However, that is only by way of parenthesis.

Mr. TAYLOR: May I ask, Sir, did you intend to resign at this meeting, or not after the adjourned meeting?

Mr. BRIDGEWATER: Has the resolution for the adjournment been seconded?

The CHAIRMAN: No, it has not yet.

A SHAREHOLDER: Is there a resolution before the meeting?—Mr. GEORGE HOPKINS (deputy chairman): Do you not think before you go to that question the meeting ought to receive the report of the accounts?—The CHAIRMAN: Certainly.

Mr. W. CUTHBERT: It is the board's business to take their own course.

The CHAIRMAN: Well, I put it to the meeting which they would prefer, whether they would go into the report and accounts or adjourn the proceedings? I shall be most happy to move that the report and accounts be received. That will place them before the meeting.—Mr. G. HOPKINS: I have much pleasure in seconding that.

The CHAIRMAN: I may say, incidentally, about the five days' notice, of which Mr. Cuthbert complains, that this is not a matter for the board to deal with, but it is fixed in the Articles of Association.

Mr. CUTHBERT: We will then alter the Articles of Association.

The CHAIRMAN: I was going to say that we, as a board, have no power to do so otherwise than as the Articles direct; we found them so.

Mr. CUTHBERT: I only said it was a state of things that rendered it almost impossible to do that which the Articles permit.

The CHAIRMAN: But as it was known a long time before that the meeting was to be held you might for the matter of that have given 50 days' notice of your intention.—Mr. CUTHBERT: I sat at home purposefully to avoid this notice.

Mr. BRIDGEWATER: The question before us now is that the meeting be adjourned for the meeting now is whether you wish the report and accounts to be received?

Mr. RILEY: A resolution has been proposed to adjourn the meeting. I second that resolution. I think during the trial it is most important that nothing should transpire here that might have an evil effect upon the other side. If we now go into the question of accounts there may be a discussion here; if we go into the question of election of directors, and the retirement of the Chairman, there are many points that we should like to discuss, I think, therefore, it is very important that we should adjourn, and that until after the decision of the trial we do no business whatever, and do not go into any discussion. I beg to second the adjournment.

Mr. G. HOPKINS: I rise to order. As I understand the question before the meeting is that the report and accounts shall be received, that motion has been proposed and seconded, and that is the resolution before the meeting whether the report and accounts shall be received.

The CHAIRMAN: Yes; that is the question before the meeting.

A SHAREHOLDER: I think the Chairman moved that the meeting be adjourned, and it was seconded by the gentleman on my right—Mr. Riley.

The CHAIRMAN explained that the question before the meeting was the proposal of the accounts; by an inadvertence the motion for an adjournment had been proposed.

Mr. J. BAYLISS: I understand the resolution before the meeting is that the accounts be received. I take it that the mere reception of the accounts is to involve the adoption of them, and that the discussion of the accounts would be carried on at the adjourned meeting. That being so, I have much pleasure in seconding the motion.—The resolution for the reception of the accounts was then put and carried.

Mr. W. CUTHBERT: I made a motion just now, will that be considered as necessary?—The CHAIRMAN: I quite understand your motion. I do not think it will be necessary.

Mr. W. CUTHBERT: It has been seconded.—Mr. RILEY: I second the adjournment.—Mr. HURST: I think it is the proper time that the meeting should be adjourned for a longer period than a fortnight. This suit can hardly be settled then, and there should be an extra week allowed for considering the documents relative to the trial. It was suggested by the Chairman that the adjournment should be adjourned to this day fortnight; if the gentleman who has moved the adjournment will say this day three weeks I should be much obliged.

Mr. RILEY: I am in the hands of the meeting as regards the period of adjournment. (Cries of "A fortnight," "a fortnight," and "three weeks.")

The CHAIRMAN: I will now put the resolution that the meeting be adjourned for a longer period than a fortnight.

The CHAIRMAN: I have also to move that the extraordinary meeting called one o'clock to-day be also adjourned to the same time and place.—A SHAREHOLDER: I second that.—The resolution was carried.

VAN CONSOLS LEAD AND BARYTES MINING COMPANY

The adjourned extraordinary meeting of shareholders was at the Guildhall Tavern, Gresham-street, on Tuesday,

Mr. ADAM MURRAY, F.G.S., in the chair.

The CHAIRMAN said the meeting had been called to consider the report of the committee appointed at the previous meeting, and would open the proceedings by asking Mr. Bolton, as Chairman of the committee, to be good enough to state what had been done.

Mr. J. C. BOLTON said the committee, after carefully considering the matter, had passed a resolution unanimously recommending amalgamation of the two companies—Van Consols and Glyn—considering that the Glyn, an offshoot of Van Consols, should not be separated. By bringing the two concerns under one there would be various economies in the management, as there would be only one board, one secretary, one captain, and so on. The committee of the Glyn shareholders, however, opposed this suggestion, they having greater faith in their mine than in Van Consols, they were bent on keeping the affairs of the Glyn Mine totally distinct from those of Van Consols. The committee decried the Glyn as being so unprofitable that it could not be sold, and that it would be better to let it remain as it is.

In reply to this circular the secretary pro tem. had received a communication for between 2000 and 3000, and there were about 1000 to be taken by gentlemen in the West of England, and probably many others of the shareholders, when they found that the amalgamation scheme could not be carried out, would apply for shares they were entitled to, and in the hands of shareholders, with a report from Capt. Ross.

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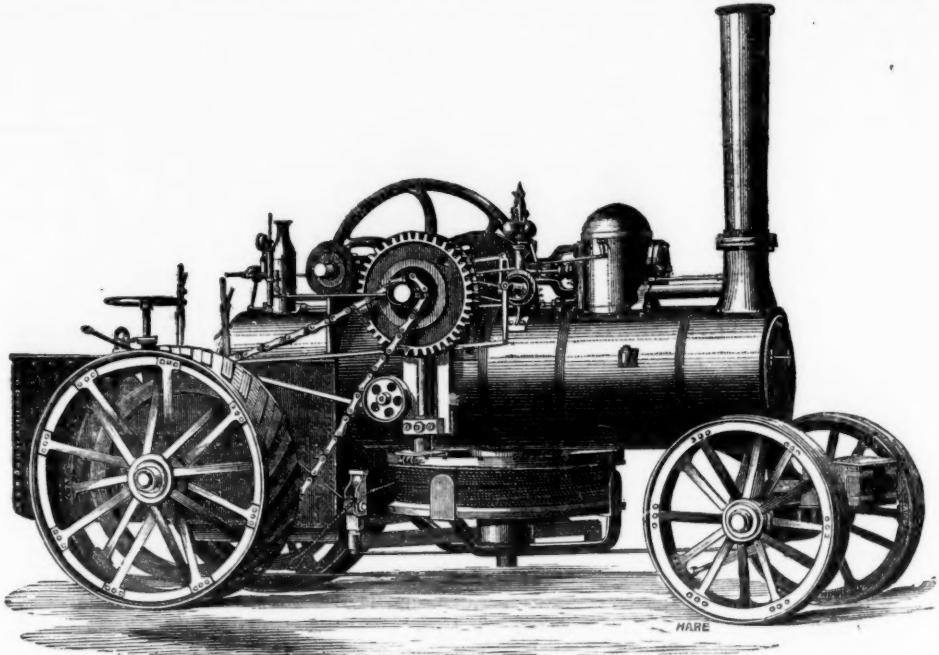
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AUG. 11, 1871

BURRELL'S PORTABLE AND TRACTION ENGINE MACHINERY.



BURRELL'S PORTABLE AND TRACTION ENGINE MACHINERY.

The improvements made of late years in portable engines, coupled with the desire shown by all makers of this class of machinery to make the latter as good as possible, has rendered the portable engine a general favourite in mining and other operations. This assertion is corroborated in a still greater degree in the case of traction engines. By way of illustration reference may be made to the portable engines constructed by Messrs. Charles Burrell and Sons, of the St. Nicholas Works, Thetford, Norfolk. In these engines the steam-boiler has large capacity and heating surface in proportion to the power; it is arranged on the multitubular or locomotive principle, and is well stayed throughout. The fittings of the boiler comprise everything necessary for safety, such as steam gauge and whistle, valves, gauges, &c.; and likewise include the requisite working appendages, such as suction and delivery pipes for pump, tube brush, set of spanners, oil can, large funnel, skid and chain, spare gauge glass, stoking iron, &c. A continuous force-pump with return hose is also attached to the boiler. The fire-boxes are made entirely of Lowmoor iron, and fitted with the necessary quantity of tubes to ensure the maximum amount of heating surface in the least possible space, as well as economy in the consumption of fuel, combined with lightness, compactness, and durability. They are covered with wood lagging and sheet-iron casing, to prevent radiation of heat. The hydraulic test is applied to the boilers up to double the pressure at which the engine is to work. The cylinders are thoroughly surrounded by steam-jackets, as well as lagged, and an apparatus for heating the feed water by the exhaust steam is likewise appended to the engine, and the engine proper is placed on the top of the boiler. The crank-shaft is carried on two cast-iron brackets firmly bolted on to the boiler, and is lengthened out to take a fly-wheel or pulley at either or both ends. The engine is fitted up with a simple reversing motion, by means of which the engine may readily be worked in either direction. Watt's governor has been adopted for controlling the working speed, this governor being fitted with speed pulleys, by means of which the engine may be adjusted to work at three different speeds.

The chimney is provided with elbow-joint and spark-arrester as shown in the illustration, when specially desired a steam-blast pipe and tap can be fitted to the chimney, which addition will be found very useful for rapidly creating a draught and raising steam in about half the usual time. The road-wheels of these portable engines are either made of wood or wrought-iron, and though our illustration show these wheels of wood, wrought-iron appears to recommend itself as being less affected by extremes of temperature. The exhaust steam from the cylinder is utilised by a feed-water heater, so as raise the temperature of the feed-water before passing into the boiler. The usual sizes of these portable engines vary from six to twelve horse-power, and they are made with one steam cylinder from six to ten horse-power inclusive, and with two cylinders from ten-horse power upwards.

The above illustration shows a perspective view of one type of traction engine constructed by the same firm. Some of these engines are driven by spur gearing whilst the engine represented is fitted up with chain gearing, and is, moreover, arranged with winding drum, or patent coiling gear, arranged so as to lay the rope uniformly on the winding drum without any attention from the man in charge. In both engines the road gear is arranged so that they may travel at two different speeds, and either speed can be immediately thrown in and out of gear by a single lever. The motive power in the engine represented is given by two endless pitch chains passing over a pinion on to a chain wheel firmly fixed to the driving wheel on each side of the engine. This arrangement of driving with two chains is found in practice to be a great improvement over engines fitted with gears, as either pinion can be thrown in or out of gear to facilitate turning. The power is conveyed to the winding drum by an upright shaft from the crank-shaft. The traction engines are fitted with double power by means of a steel counter-shaft, and when specially desired they can also be furnished with an improved arrangement of compensating or differential gear, to enable them to turn sharp curves more readily.

The driving-wheels are fitted with cross plates instead of plain tyres, which renders them less liable to slip on soft ground, and besides doing away with the inconvenience and expense occasioned by tyres getting loose. These engines are mounted on springs upon the hind axles, by which wear and tear of the engine is reduced when travelling on rough roads, and every engine is fitted with a powerful friction brake, as well as with fly-wheel, governors, water tank, and coal bunkers. The driving and steering are both managed from the foot-plate, and all gearing liable to breakage is of steel or malleable iron. The steam cylinders of these engines are steam-jacketed, and combined with a dome. The engine shown above is a 12-horse power, single cylinder, though they are made in different sizes, from 6 to 20-horse power. The road wheels are of wrought-iron 20 in. wide, which width can, however, easily be increased, so as to admit of the engine being taken on very soft land.

As an indispensable adjunct to the traction engine when used for carrying coal, minerals or other products of the mining industries, a road-engine wagon has been specially constructed by Messrs. Charles Burrell and Sons for use with road locomotives and traction engines. These wagons are made either with or without springs, and are constructed to carry 5, 6, or 8 tons, as required. The wagon frame and wheels are of the ordinary construction, and are also manufactured on three wheels, to tip or otherwise, but the couplings are so arranged that no strain is thrown on to the body of the wagon. By the present arrangement a train of these wagons will turn any reasonable curve, each wagon following in the track of the one preceding it.

SAFETY APPARATUS FOR HOISTING CAGES.

In order to provide a safety apparatus for hoisting cages which is more certain in its action than the apparatus hitherto designed, and which causes the cage to be stopped gradually or without sudden jerk, in case the rope to which it is attached breaks, Messrs. EICHLOFF and ARDLETT, of Bochum, propose an improved apparatus. The cage has lateral cross-heads, and there are corresponding wooden guides in the shaft. To the cross-head two plates are attached, which serve as guides for the two wedges. To the upper end of each of the wedges is hinged a piece with rack inside into which a pinion gear, and to this pinion are fixed two wheels, having sharp teeth on their periphery. The bolt on which the pinion and the wheels turn is fixed to a spring fastened on the inside of the cross-head. On the bolt there is also a roller, which, by the pressure of the spring, bears against the wedge, constituting part of a cross-head fixed to the suspension rod, to which the rope is attached. The suspension rod passes loose through the main cross-head of the cage, and supports it when the cage is in working order. In a slot of each of the wedges there is a wheel with sharp teeth running on a pin.

As long as the cage is properly suspended by the rope the wedge is in its top position and keeps the two rollers apart so as to prevent the wheels from touching the guide. If, however, the rope breaks, the springs pressing the rollers against the wedge force it down, and then press the wheels against the guide, causing the teeth to enter more or less into the wood of the same. The cage is at the moment beginning to fall; consequently the wheels will turn and the pinions lift the racks and the wedges. The latter sliding with their back on the inclined part of the guide plates are jammed with their face against the guide, thereby acting as brakes. With the wedges the wheels are raised, and at the same time shifted within the wedges towards the guide, as the pins on which the said wheels turn rise in the slots, which are inclined somewhat more than the back of the wedges. Consequently the teeth of these wheels also enter into the wood of the guide, the wheels revolve, and being forcibly pressed against the pins, the friction between the wheels and the pins not only creates a further resistance against the descent of the cage, but it also tends to push the wedge upwards and against the guide. The described apparatus acting as a powerful brake gently arrests the downward motion of the cage.

DIMINISHING THE INFLAMMABILITY OF WOOD.

An invention which, although primarily intended for another purpose, is likely to prove useful in preserving timber in mines and workshops, has been patented by Mr. G. R. MCKENZIE, of Glasgow. The invention may in practice be applied in different degrees in different cases, the resulting diminution of the inflammability of the wood treated being greater the stronger the solutions are that are employed, and the longer the duration of the treatment. A moderate application of the improved process, whilst materially diminishing the inflammability of wood, has also the important advantage when applied to more or less "green" or new wood of "seasoning," or in other words of effecting a change practically equivalent to that due to the ordinary process of seasoning, and the wood so treated can be subsequently turned in a lathe, or otherwise cut or shaped by means of tools such as are used for those purposes in ordinary wood. The invention consists in treating wood with soda crystals (monocarbonate of soda) in an improved manner, and in carrying it out the wood is by preference treated when in the sawn or cut condition, in the form of boards or joists, for example, rather than in that of thicker balks or masses.

When the object is to diminish the inflammability of the wood in a moderate degree at comparatively small expense, and yet secure the advantage of the "seasoning" effect accompanying the treatment, in the case of American ash, bay mahogany, and yellow pine in boards about $\frac{1}{2}$ in. thick. He boils the wood under atmospheric pressure in a tank which is by preference covered in a solution containing about 2 lbs. soda crystals for each gallon of water. In arranging the boards in the tank they are "pinned" or separated by small pin or blocks, so that the liquid has free access between them, and the solution is filled in to a depth of about 6 in. above the top of the wood, so that the wood does not become uncovered during the boiling process. The wood is held down by clamp-screws, chains, weights, or any other convenient means. The boiling should be continued for about 5 hours, and should then be discontinued for about 9 hours, after which the boiling should be renewed for about 2 hours. On the second boiling being completed the wood should be taken out of the tank as hot as it can be handled, and be "pinned" or piled with spaces between the boards or pieces in order to be dried, and this operation is to be effected without any extra heat, but by currents of cool air, and may be expedited by means of artificial or forced currents of air when conveniently applicable. In the case of the wood being about 1 in. thick the first boiling should be continued for about 8 hours, the interval to be about 18 hours, and the second boiling about 4 hours.

When the wood is about 2 in. thick the first boiling should be for about 10 hours, the interval about 30 hours, and the second boiling for about 6 hours. For white pine, pitch pine, oak, walnut, beech, elm, Spanish mahogany, and similar woods the strength of the solution should be increased to 3 lbs. soda crystals for every gallon of water, but the duration of the treatment may remain the same as herein-before prescribed for similar thicknesses of wood, it being, however, sometimes advantageous to soak the wood for some hours in the cold liquid before boiling. When the wood is 4 in. or more in thickness it should be boiled under pressure, and in a still stronger solution; thus, for example, a log of bay mahogany measuring about 20 ft. by 3 ft. by 2 ft. should be boiled under a pressure of about 80 lbs. per square inch in a solution of 4 lbs. soda for every gallon

of water, the first boiling being for about 20 hours, the second about 60 hours, and the second boiling for about 10 hours. When considerable diminution of the inflammability is desired, every gallon of water in the cases of $\frac{1}{2}$ in. white pine or 1 in. yellow pine, and the wood should be soaked for about 12 hours, boiled for about 10 hours, soaked again for about 24 hours, and boiled for about 5 hours. For similar thicknesses of oak, elm, or beech wood, the strength of the solution should be of from 3 to 5 lbs. soda for every gallon, and the wood should be soaked for about 12 hours, boiled for about 24 hours, and the second boiling for about 6 hours. In the cases of $1\frac{1}{2}$ in. white pine or $2\frac{1}{2}$ in. yellow pine, the wood should be soaked for about 20 hours, boiled for about 40 hours, soaked again for about 40 hours, and boiled again for about 20 hours. In the cases of 3 in. by 6 in. white pine, or 5 in. by 8 in. yellow pine, the wood should be soaked for about 20 hours, boiled for about 20 hours, soaked again for a week, and boiled again for about 10 hours.

HYDROCARBURES OF COAL TAR.

The process which forms the object of the invention of M. HIRNAUX, of Vilvord, Belgium, is based upon these points:—hydrocarbures of coal tar are formed of two elements—carbon and hydrogen—the centesimal proportions of which are extremely diverse. He remarks that, as a same cause cannot produce different conditions of temperature, of pressure, of proportions, and so on when already combined. Now, it has been ascertained by experiment that these carbures of hydrogen may pass from one to another by hydrogenation or by dehydrogenation. Thus, in benzene, C_6H_6 , by nascent hydrogen, H_2 , more hydrogenated carbures may be obtained, C_7H_8 , toluene C_7H_8 , xylenes, other products, according to the respective quantities of the elements in presence of each other, and the practical conditions of reaction.

Further, various hydrocarbures heated together in a closed and at a very high temperature, combine, transform, and give birth to other hydrocarbures of more stability, and the composition which depends on that of the mixture. On the other hand, from benzene C_6H_6 to aniline C_6H_5N , it is needless to say that intermediary of nitrification with exterior reduction. The direct action of the benzene with the ammonia NH_3 , at very high temperature and pressure immediately produces aniline; thus $C_6H_6 + NH_3 = C_6H_5N + H_2$, which latter, when disengaged, does not inactive, the hydrogen, the hydrocarbur, or the aniline are formed.

The operation will begin by depriving the coal tar of its acidic matters by the ordinary alkaline treatment. It will, therefore, now contain only its neutral hydrocarbures, and some acids which need not be eliminated because they are amines formed. This tar will be analysed and the respective quantities of C and H therein will be ascertained. These quantities are always approximately equal, so that if all C were united to H there would sensibly be benzene C_6H_6 . It must, however, be in mind that the nature of coal tar is exceedingly variable, according to the quality of the coal, and the conditions of the distillation; these quantities may naturally be regulated, because a more hydrogenated hydrocarbur may be added to obtain the proportion between the carbon C and the hydrogen H. The proportions once obtained, the mixture very uniform (on stirring of the mass), the temperature, pressure, and the duration of the reaction sufficient, there is a unification of the hydrocarbures.

The C and the H have a tendency to separate like the H and O in the separation of the water H_2O (the repulsive force of heat overcoming the affinity of the elements). When they are or less in this state of indifference the mixture being very unstable, the temperature is lowered, and the result is a single compound, the stability of which will be very great, and the composition which will depend upon that of the mixture; to manufacture aniline benzene will be produced, which will then react on NH_3 ; thus $C_6H_6 + NH_3 = C_6H_5N + H_2$. This H_2 is utilized to hydrogenate the hydrocarbures of the tar, and in view of the mixture will be made so that there may be an excess of carbon, which excess this hydrogen will destroy. It will be that according to the proportions of the elements either to C_6H_5N or zylene C_6H_4N and so on may be produced, but easily as aniline, for benzene is the typical hydrocarbur, the most stable of the aromatic series. Further, for dry air is almost as advantageous to have mixtures of amine as are the separation of the various amines is in all cases preferable. It might be desired to manufacture not amines but the aromatic hydrocarbures, benzene, toluene, and similar products; in such case it is only necessary to employ ammonia.

SUPPLYING FUEL TO FURNACES.—The object of the invention of Mr. R. HEALEY, of Burnley, is to throw a constant thin stratum of fuel on to a furnace so as to obtain a regular amount of heat, minimum of fuel, and to avoid the formation of dense smoke and the consequent waste of fuel. For example, at the head of a double flued boiler, above the furnace door, he has a large hopper which is kept constantly supplied with fuel in any convenient manner. At the lower part of this hopper is a box in which are mounted a pair of crushing rollers for crushing the fuel and passing it into two shoots, which conduct it in two regular streams to boxes placed one in front of each furnace. In each of these is a revolving fan, the blades of which catch the crushed fuel, and throw it forward some distance into the furnace. This is driven by means of cone pulleys, and by placing the driver upon a larger or smaller diameter thereof, the distance to which fuel is thrown into the furnace may be regulated. The quantity of fuel supplied may be regulated by altering the speed of the driving rollers.

COPPER ORES.			
Sampled July 25, and sold at Swansea, Aug. 7.			
Mines.	Tons.	Produce.	Price.
Betts Cove	98	11%	£7 5 6
ditto	96	11%	7 2 0
ditto	98	11%	ditto
ditto	96	11%	7 2 0
ditto	109	11%	7 1 0
ditto	108	11%	6 13 0
ditto	108	11%	ditto
ditto	100	11	6 11 6
ditto	100	11	6 12 0
ditto	100	10 1/2	ditto
Cronbane	70	2 1/2	0 18 0
ditto	103	2 1/2	1 1 0
ditto	102	2 1/2	0 19 6
ditto	97	2 1/2	1 0 6
ditto	68	2 1/2	1 1 0
Cavera	6	0	6 1 0
Berchavon	248	0	0
Union Ore	190	55 10 0	0
TOTAL PRODUCE.			
Betts Cove Ore	1009	£6865 9 0	173
Cronbane Ore	440	441 8 6	65
Cavera Ore	310	1191 10 6	Portuguese Ore
Berchavon Ore	248	1148 13 0	Copper Regius
Union Ore	190	55 10 0	15

Names.	Tons.	Amount.
Copper Miners' Company	111	£26 5
P. Grenfell and Sons	475	1,972
Nevill, Bruce, and Co.	235	1,760
Vivian and Sons	710	2,945
Williams, Foster, and Co.	570	2,320
Mason and Elkington	50	330
Charles Lambart and Co.	229	1,236
Sweetland, Tittle, and Co.	10	162
Landore Copper Company	126	822
Total	216	£12,011 10
TOTALS AND AVERAGES.		
Whole sale ...	2616	£ 8 1-16
21 cwt. Produce.	21	£ 4 15 7
Per unit.	11s. 1d.	£ 24 15 0
Standard		
Copper ores for sale, at Swansea, August 14.—Betts Cove Ore 935 0		
208—Carrasdo Ore 241—Cavera Ore 151—Cronbane Ore 113—Berchavon Ore 35—Tigrony Precipitate 19—Tons, 1854 tons.		

(AUG. 11. 1877)



PARIS INTERNATIONAL EXHIBITION, 1867.



VIENNA INTERNATIONAL EXHIBITION, 1873.



LONDON INTERNATIONAL EXHIBITION, 1874.



CORNWALL POLYTECHNIC SOCIETY, 1867 and 1873.

TANGYE BROTHERS AND HOLMAN,

10, LAURENCE POUNTNEY LANE, LONDON, E.C.,
AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

The "SPECIAL" DIRECT-ACTING STEAM PUMP, Holman's Patent Self-acting Exhaust Steam Condensers.

UPWARDS OF 12,000 "SPECIAL" STEAM PUMPS ARE IN USE.

After eight years of successful application for all purposes to which steam-driven pumps can be applied, THE "SPECIAL" STEAM PUMP STILL MAINTAINS THE FIRST POSITION IN THE MARKET, notwithstanding that it alone—of all direct-acting pumps—has been subjected to the great variety of severe tests that must be encountered in such a period of time. Some valuable improvements have been suggested in the course of a long experience, and their adoption has rendered the apparatus at once the simplest and most certain in action. There is absolutely no extraneous gear, and the steam cylinder is *no longer than the pump*. The valves are of easy access, and are suited for pumping fluids and semi-fluids of almost any consistency.

Holman's Condenser

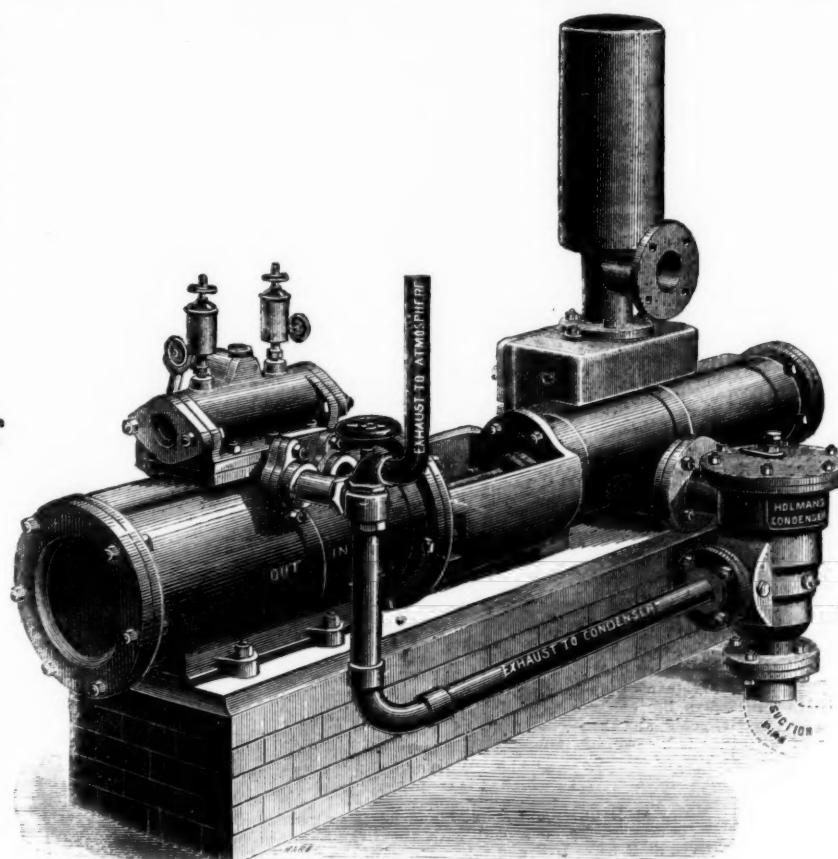
TURNS WASTE STEAM INTO
GREAT POWER.

SAVES HALF ITS COST IN PIPES AND
CONNECTIONS.

PREVENTS ALL ESCAPE OF STEAM IN
MINES OR ELSEWHERE.

REQUIRES NO EXTRA SPACE.

SAVES TWENTY TO FIFTY PER CENT.
OF FUEL.



WILLIAM ELLIOT, Esq., of the Weardale Iron and Coal Company, writes under date Sept. 17th, 1875, as follows:—"We have now THIRTY-ONE of your SPECIAL STEAM PUMPS in operation at the various collieries under my charge—some of them employed pumping water out of our pits to the depth of 50 fms.—others employed in the pits, and a good many feeding Boilers. I have no hesitation in saying that we have found the Cheapest and Best Pumps of the kind we have tried. I can with confidence recommend them to intending purchasers."

Messrs. BURT, BOULTON, and HAYWOOD, Chemical Manufacturers, of London, have FORTY of the "SPECIAL" STEAM PUMPS in use at their works.

HOLMAN'S CONDENSERS

Are made to suit any size and kind of Steam Pump. They form a part of the suction pipe of the Pump, and while they effectually condense the exhaust steam they produce an average vacuum of 10 lbs. per square inch on the steam piston, increasing the duty of the Engine, and effecting a saving in fuel of from 20 to 50 per cent.

In Mining operations these Condensers will be of great value.

All Boiler Feeders are recommended to be fitted with these Condensers, as not only is the exhaust steam utilised in heating the feed water, but is returned with it into the boiler.

GRATUIT REDUCTION IN PRICES.

The following sizes are suitable for low and medium lifts:—

Diameter of Steam Cylinder ...In.	3	4	4	4	5	5	6	6	6	7	7	7	7	8	8	8	8	9	9	9	9	10
Diameter of Water Cylinder ...In.	1½	2	3	4	3	4	5	3	4	5	6	3	4	5	6	7	8	5	6	7	8	9
Length of Stroke	In.	9	9	9	9	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	12	18
Gallons per hour		680	815	1830	3250	1830	3250	5070	1830	3250	5070	7330	1830	3250	5070	7330	9750	3250	5070	7330	9750	13,000
Price of Special Pump ...£	16	18	20	25	22	10	27	10	32	10	25	30	35	40	30	35	40	45	50	40	45	50
Extra, if fitted with Holman's Condenser and Blow-through Valve	£7	£7	£9	£11	£8	10	£11	10s	£12	10s	£9	£12	£15	£15	£10	£13	£15	£16	£22	£13	£16	£22

CONTINUED.

Diameter of Steam Cylinder...In.	10	10	10	10	12	12	12	12	12	14	14	14	14	14	14	16	16	16	16	16	18	18	
Diameter of Water Cylinder...In.	7	8	9	10	6	7	8	9	10	12	7	8	9	10	12	14	8	9	10	12	14	9	10
Length of Stroke	In.	12	18	24	24	18	18	18	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Gallons per hour		9750	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	30,000	9750	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000	50,700
Price of Special Pump..£	65	75	90	100	75	80	85	110	120	140	110	120	130	140	160	180	140	150	180	200	180	190	210
Extra, if fitted with Holman's Condenser and Blow-through Valve	£23	£24	£25	£35	£20	£27	£27	£38	£38	£50	£28	£28	£40	£40	£55	£28	£40	£55	£55	£45	£45	£56	£57

Intending purchasers of Steam Pumps would do well to observe the great length of stroke, short steam cylinder, and short piston of the "Special" Steam Pump, as compared with the short stroke, long steam cylinder, and long piston of the Pumps of other makers, as the efficiency and durability of the machine, and the space occupied by same, greatly depend upon this. The advantage of long strokes will be obvious when purchasers are reminded that each set of suction and delivery valves of a "Special" Steam Pump with 24 in. stroke, running at 120 ft. per minute, would open and close only 30 times per minute, as against 120 times per minute in a Pump with only 6 in. stroke performing same duty.

The "Special" Steam Pump can be worked by Compressed Air as well as by Steam.

HUNDREDS of these PUMPS are USED for HIGH LIFTS IN MINES, for which purpose they are made with 21, 24, 26, 28, 30, and 32-inch Steam Cylinders, and 36, 48 and 72-inch Stro

The following Testimonial gives one Example of the Power Gained by the action of Holman's Patent Condensers:

NORLEY COLLIERY, WIGAN.

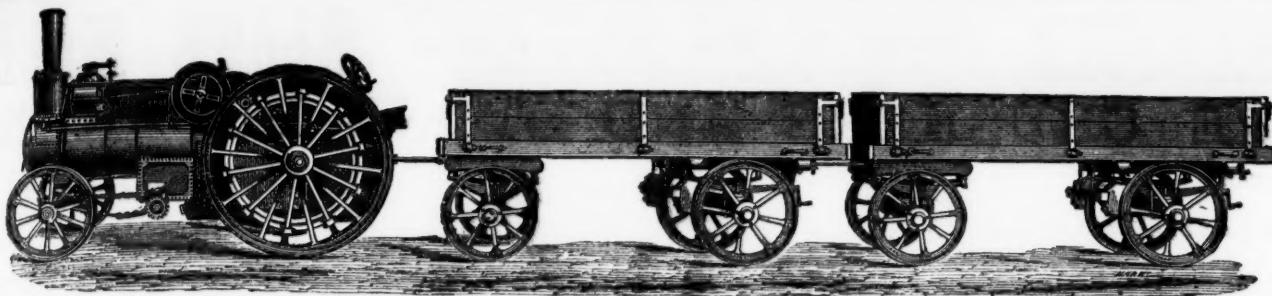
Messrs. TANGYE BROTHERS AND HOLMAN.—I have great pleasure in recording my entire satisfaction with the working of the Holman's Patent Steam Pump Condenser which you have supplied to us. The complete condensation of the steam is, apart from its value in the strict economic sense, a most valuable feature in the drainage of underground work-

ings. The perfect manner in which this important result is accomplished by your Condenser is extremely creditable to you, and merits the thanks and commendation of the Mining Engineer. When we start the "Special" Steam Pump the Condenser commences working automatically, and maintains a constant vacuum of 10½ lbs. per square inch, even when we run the Pump upwards of 80 strokes (106 feet) per minute. It may perhaps be interesting to you to know that when we were running the Pump at 84 strokes (168 feet) per minute, the steam gauge

indicating a steam pressure of 36 lbs. per square inch, 89 yards from the Pump, and the Condenser vacuum gauge on the exhaust pipe indicating a steady vacuum of 21½ inches, I turned the exhaust steam from the Condenser into the atmosphere, when the speed at once fell to 44 strokes per minute. The working economy thus shown is really so great that the cost of the Condenser must be repaid in a very short time.

(Signed)

No. 11. 1877.]



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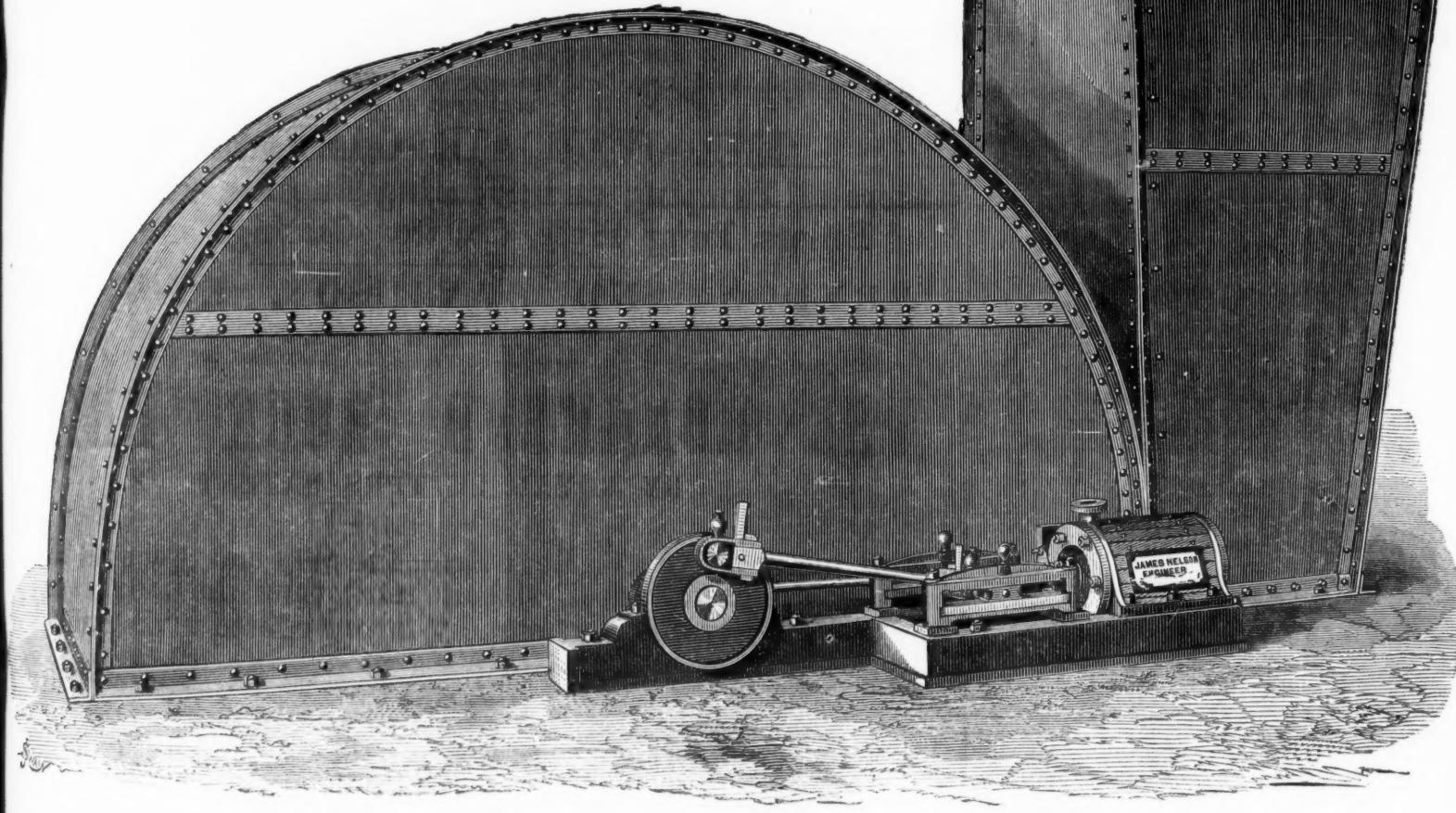
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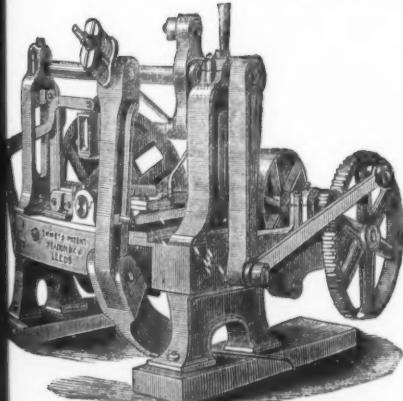
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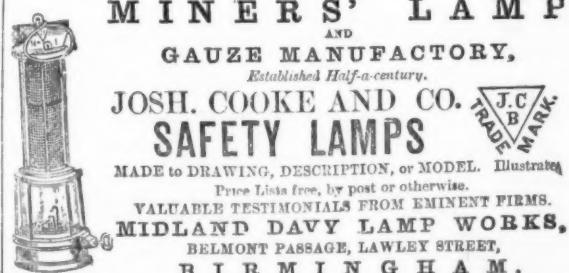
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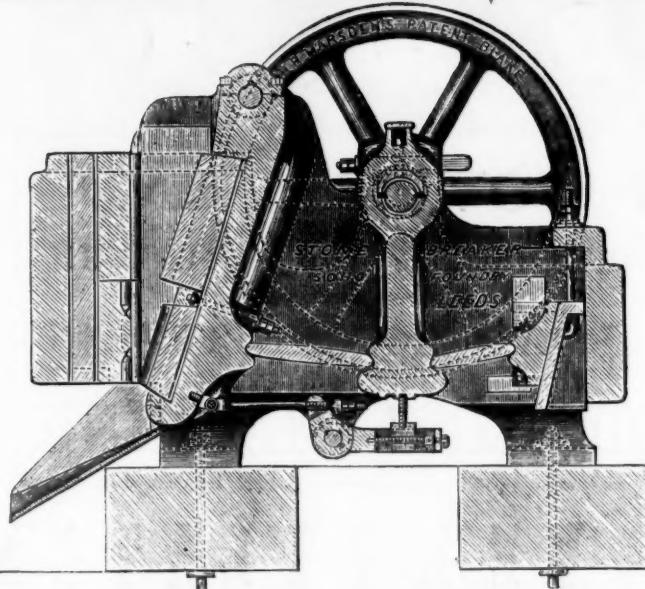
We are, yours faithfully,

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